

## Application: 0000000170

A. BAILEY Pagels - pagelsa@wnmu.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Jennifer Johnston
Title	Assistant Professor
Phone	(575) 538-6303
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### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PSY
Number	102
Title	Introduction to Psychology
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	PSYC
Number	1110
Name	General Psychology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for PSYC 1110

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Explain how the scientific method and psychological research methodologies are used to study the mind and behavior.
2. Recall key terms, concepts, and theories in the areas of neuroscience, learning, memory, cognition, intelligence, motivation and emotion, development, personality, health, disorders and therapies, and social psychology.
3. Identify the major theoretical schools of thought that exist in psychology as they relate to the self, the culture, and the society.
4. Describe and explain how human behaviors are influenced by social structures, institutions, and processes within the contexts of complex and diverse communities.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

The students are required to apply what they learn in class through a series of self-exploration activities and discussions. There are at least three full-time or part-time faculty teaching Introduction to Psychology course every semester. To allow academic freedom among instructors, we ask the instructors to create their in-class assignments that address the same learning outcomes so they can adopt the same set of rubrics to ensure all related HED essential skills are taught and evaluated throughout the semester. Sample assignments include psychological/personal relevance activities exploring topics such as personality inventory, sensation and perception, memory enhancement, persuasion and groupthink, etc. Students will be asked to explore issues such as mental disorders as well as psychotherapies to write up a short paper in APA format. Students are graded on whether their “understanding or recognition of multiple viewpoints.” They also need to demonstrate that they can understand and express key arguments of an issue clearly. Another important skill that goes along with critical thinking is that they need to be able to distinguish fact from opinion and be able to articulate the difference between the two in their in-class assignments.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Through the same sets of self-exploration activities and discussions, we help students develop their critical thinking skills. Students are asked to write a paper on a psychology topic that interests them. They are graded on whether they can take a position on a problem or issue. They need to demonstrate that they have the ability to provide at least two scholarly sources to back up their position. Lastly, they need to demonstrate that they can evaluate information and sources for credibility. Students are instructed to defend their position with the information they cite from the textbook and at least one peer-reviewed journal article.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The self-exploratory activities and writing assignments we provide in Introduction to Psychology will give students multiple opportunities to evaluate personal and social justice issues as they relate to specific contexts. They will also compare solutions across social and cultural relationships. Students' writing and in-class behaviors will be evaluated for their ability to demonstrate increased cultural awareness and understanding in social justice as well as global human issues. They will also practice identifying underlying ethical issues or contextual influences on the problem and on their position.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtxsUi0CJHkV5-rKUrpNEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 20 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

SAMPLE Syllabus PSY 102\_ 1110

Filename: SAMPLE\_Syllabus\_PSY\_102\_\_1110.docx Size: 31.2 kB



Upload Rubric

Completed - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## PSY 102 APA Writing Assignment

Filename: PSY\_102\_APA\_Writing\_Assignment.docx Size: 131.7 kB

### Application: 0000000191

Stephen Mathewson - smathewson@cnm.edu  
NM General Education Curriculum



#### Application Form

Completed - Mar 21 2019

## Application Form

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## Essential Skills

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	Vincent S Schenck
Title	Full Time Instructor
Phone	505-508-3711
Email	vschenck@cnm.edu

## Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

## Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	MUSC
Number	1140
Title	World Music
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	MUSC
Number	1140
Name	World Music

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Develop a vocabulary of musical terms and be able to describe music using those terms
2. Demonstrate knowledge of composers, their music and their relationship to historical periods
3. Recognize how music played and plays a political, social, and cultural function
4. Identify well-known pieces and the historical and social context in which they were composed
5. Demonstrate basic understanding of music notation and musical communication

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Throughout the course, instructors present listening examples of historical and/or contemporary musical works to facilitate student's genre and medium awareness, for example, a sonata (chamber music), a symphony, a concerto, an opera excerpt, and/or Chorus. Students will attend classical music concerts and UNM's Keller Hall, and in written form, provide a reflection and evaluation of the performances applying a theoretical and cultural lens. Student concert reports evaluate the auditory experience of the performance when they analyze the piece's melody, mode, meter, tempo, rhythm, dynamics, texture, harmony while producing arguments to defend their critiques of the performers technical skills in the musical works presented.

Reference: Sample Assessment – Concert Form

See questions: 5, 7, 8,

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will apply problem set in their concert reports. Students will acquire evidence for their report by analyzing and evaluating various aspects of musical compositions, including instrument recognition, historical eras, composer, genre, and the application of musical terms and concepts. In the final portion of the report form students will be assessed as they defend and evaluate their reasoning and conclusions about two separate pieces by the same composer in a live versus recorded performance.

Reference: Sample Assessment – Concert Form

See questions: 5, 7, 8, 10

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Throughout the semester, students are exposed to a variety of music by composers from different parts of the world and time periods-- Medieval, Renaissance, Baroque, Classical, Romantic, 20th Century, and 21st Century--and will apply an understanding of intercultural reasoning and competence by participating as an audience member of a classical concert. By attending a collaborative live musical performance, students are exposed to sounds made by acoustic instruments and voices which are based on human made music systems that reflect the patterns and proportions of the natural world. In the performance environment, students will develop a knowledge and practice of civic engagement as they are assessed for their understanding of concert etiquette.

Reference: Sample Assessment – Concert Form

See questions: 1-4, 9, program

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 21 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

MUSC 1140 Sample Assessment - Concert Form

Filename: MUSC\_1140\_Sample\_Assessment\_-\_Concert\_Form.pdf Size: 94.2 kB





## Upload Rubric

Completed - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### MUS 1140 Scoring Rubric

Filename: MUS\_1140\_Scoring\_Rubric.docx Size: 14.3 kB

## Application: 0000000047

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



## Application Form

Completed - Mar 18 2019

## Application Form

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### Contact Information

Name	Joel Keranen
Title	Professor of Physics
Phone	5754922820
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### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PH
Number	114A
Title	Astronomy
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	ASTR
Number	1115C
Name	Introduction to Astronomy Lecture and Lab

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will discuss the night sky as seen from Earth, including coordinate systems, the apparent daily and yearly motions of the sun, Moon, and stars, and their resulting astronomical phenomena.
2. Students will list and apply the steps of the scientific method.
3. Students will describe the scale of the Solar System, Galaxy, and the Universe.
4. Students will explain telescope design and how telescopes and spectra are used to extract information about Astronomical objects.
5. Students will describe the formation scenarios and properties of solar system objects.
6. Students will describe gravity, electromagnetism, and other physical processes that determine the appearance of the universe and its constituents.
7. Students will describe methods by which planets are discovered around other stars and current results.
8. Students will describe the structure, energy generation, and activity of the sun.
9. Students will compare our sun to other stars and outline the evolution of stars of different masses and its end products, including black holes.
10. Students will describe the structure of the Milky Way and other galaxies and galaxy clusters.
11. Students will describe the origin, evolution, and expansion of the universe based on the Big Bang Theory and recent Astronomical observations.
12. Students will describe conditions for life, its origins, and possible locations in the universe.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

To develop critical thinking skills in this course, students will

1. Complete laboratory reports in the lab portion of the course wherein they will develop the ability to express quantitative information symbolically, graphically, and in written language.

(Communication/Representation of Quantitative Information)

2. Complete a peer graded assessment of a laboratory report to interpret, analyze, and critique information by others. (Analysis of Quantitative Arguments)

3. Participate in a cumulative lab practical as a part of the final exam for the laboratory. The practical consists of presenting student with a set of devices and instruments, asking students to determine astronomy principles that can be tested with the device and analyzing the results of these tests.

(Application of Quantitative Models)

4. Participate in the assessment: Solar System Survey. Students will answer conceptual questions by use of astronomical concepts of the solar system. (Problem Setting and Reasoning/Conclusion)

5. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition and Evidence Evaluation)

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning skills in this course, students will

1. Use the knowledge taught in lecture and laboratory to address and solve specific problems in astronomy. (Problem Setting and Evidence Acquisition)
2. Students will evaluate certain problems, within lecture and laboratory, for their physical validity to learn to develop conclusions, solutions, and outcomes that reflect an informed, well reasoned evaluation. (Representation of Quantitative Information and Reasoning/Conclusion)
3. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition, Evidence Evaluation, Representation of Quantitative Information, and Analysis of Quantitative Arguments)
4. Participate in a laboratory assessment, “Observing the Sun’s Position and Motion”. This activity consists of solving solar system problems about the motion of the Sun, to test students on basic physical principles of solar system astronomy. (Problem Setting, Evidence Acquisition, Reasoning/Conclusion)

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To develop personal and social responsibility skills in this course, students will

1. Write a group laboratory report on an experiment in which they work together as a team. Student interaction within their group will be integral in this experiment. (Collaboration Skills and Teamwork)
2. Visit an astronomical observatory and write notes on all possible astronomical applications on the processes in the observatory. The notes will be analyzed and discussed. (Civic Discourse, Civic Knowledge, Evidence Acquisition, and Reasoning/Conclusion)
3. Read an article about unethical behavior in science to evaluate the evidence and data for credibility. Students will write a report about this article in the framework of concepts learned in lecture and laboratory. Specific examples of error and fraud are to be addressed. This assignment will assess the ability of the students to recognize and mitigate unethical behavior in their own work and others. Ethical reasoning will be central to this assignment. (Ethical Reasoning and Evidence Evaluation)
4. Students will write an essay on the importance of astronomy on the development of civilization and society. (Sustainability and the Natural and Human Worlds)

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## PH114AL Experiment 4 Week 4

Filename: PH114AL\_Experiment\_4\_Week\_4.pdf Size: 345.8 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000238

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
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### Contact Information

Name	Miguel Vicens
Title	Associate Dean School of Business
Phone	(No response)
Email	Miguel.vicens@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	ECON
Number	202
Title	PRINCIPLES OF MICROECONOMICS
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ECON
Number	2120
Name	PRINCIPLES OF MICROECONOMICS

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Follows the SLO's for ECON 2120

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Explain the concept of opportunity cost. Demonstrate knowledge of the laws of supply and demand and equilibrium and use supply and demand curves to analyze responses of markets to external events, including price ceilings and price floors. Explain the concepts and calculate price elasticity of demand and supply and income elasticity. Demonstrate an understanding of consumer choice including utility analysis. Demonstrate an understanding of producer choice, including cost analysis and breakeven points. Compare and contrast the following market structures: perfect competition, monopoly, monopolistic competition, and oligopoly. Explain the impact of government intervention in markets including the impact of taxes and antitrust. Explain the role of labor and capital markets.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students are able to practice verbal and non-verbal communication. Verbal and written communication is used to argue about economic issues. Students also use graphs and numbers and write about economic indicators and interpret them to draw conclusions. Most importantly, students practice writing and talking about facts and positive statements and how those facts that be used to make recommendations to make sound economic and business decisions.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students practice critical thinking by using analogies and drawing conclusions while they follow the scientific method. Students use real life examples and situations to solve problems and find applications of economic theory and their impacts on individuals, firms, and communities.

***Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students engage in activities that introduce the importance of ethical allocation of resources. The class introduces the concept of sustainable economics and how individuals, firms and communities can improve their quality of life and satisfaction today and in the future. In addition, the students work independently and in groups to understand the importance of individuals in the economy as consumers and active members of local, state and national economy.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CjHkV5-rKUrPnEBVUkNjaJPSJAaorjVjhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 22 2019



#### Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### ECON 202 Homework Chapter 5 &6

Filename: ECON\_202\_Homework\_Chapter\_5\_6.pdf Size: 31.7 kB



#### Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### ECON 202 PRINCIPLES OF MICROECONOMICS FALL 2018

Filename: ECON\_202\_PRINCIPLES\_OF\_MICROECONOMICS\_zn4z6X1.docx Size: 110.8 kB

## Application: 0000000201

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



#### Application Form

Completed - Mar 22 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Corrie Neighbors
Title	Physical Geology
Phone	575-538-6352
Email	corrie.neighbors@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	GEOL
Number	1110
Title	Physical Geology
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	GEOL
Number	1110L
Title (if applicable)	Physical Geology Laboratory, 1 credit

## New Mexico Common Course Information

Prefix	GEOL
Number	1110/ 1110L
Name	Physical Geology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for GEOL 1110 Physical Geology and GEOL 1110L Physical Geology Laboratory



## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Recall, describe or explain geologic vocabulary
3. Recognize or explain the evidence used to support the theory of plate tectonics. Describe or identify how plate tectonics is related to the structure and features of the Earth.
4. Describe the formation of, and describe, compare, and classify minerals.
5. Identify or describe the three main rock types, how each form in the context of the rock cycle and what each indicates about its environment of formation.
6. Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.
7. Describe or discuss the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
8. Recognize or describe the geologic processes involved in the formation and concentration of geologic resources.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

**Problem Setting:**

Understand that scientists rely on evidence obtained from observations. Students learn to make basic scientific observations related to earth processes.

**Evidence Acquisition:**

Students are expected to be able to describe the processes of scientific thought including observation, hypotheses formation, experiment design, positive and negative controls in experiments and alternative hypotheses. Students make observations of earth processes and generate a hypothesis to understand and explain their observations.

**Evidence Evaluation:**

Throughout the semester, students are required to gather information from experiments in a group setting. The students then compare their data with the data from other teams and compare and contrast aspects of their respective experiments.

**Reasoning and Conclusion:**

Students are required to formulate a hypothesis and then design and conduct an experiment to test the hypothesis. Students assessed their results in the context of results from other teams and then remark on the materials and methods of the experiments. Additionally, students are required to identify weaknesses and issues associated with their experiment and provide suggestions as to how to move forward with revised experiments.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

**Communication/Representation of Quantitative Information:**

The students work in groups to perform the experiments and collect the data, and are required to provide individual reports and data analysis in graphical formats. Students are compelled to show their work throughout the mathematical analysis of the data to effectively communicate the quantitative reasoning and method applied.

**Analysis of Quantitative Arguments:**

Students are required to select and perform appropriate quantitative analyses of scientific observations. Students graph data (e.g., sea surface temperature, flood recurrence interval) and interpret trends in the data. Students perform calculations from mapped data (e.g., distances, tectonic plate rates)

**Application of Quantitative Models:**

Students collect data and apply discrete data points on a graph (e.g., in the field, students measure and plot a stream profile with calculated water velocity). Students are then expected to think outside the parameters of the experiment to make predictions about how different conditions would affect the outcomes (e.g., how does stream profile affect water velocity?). After the gathering of quantitative data, students are required to identify possible sources of error relating to the data sets and methods used.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the Natural and Human Worlds:

Students should gain knowledge of natural Earth resources (e.g., minerals, rocks, water) and how they are consumed and appropriated by society. Students become aware of the dynamic changes of the Earth and the time dependent nature of Earth processes and resources (e.g., rate of aquifer recharge as compared to drawdown consumption). Students gain understanding of the dynamic nature of the Earth, both from natural and anthropogenic processes.

Civic Discourse, Civic Knowledge and Engagement – Local and Global:

Students, as members of society, gain knowledge of the scientific method and how to apply this method to real-world problems (e.g., how to assess geohazard to a potential new home site). Students learn how to use scientific data and methods (i.e., the scientific method is not a belief) for the betterment of society in public discourse and policy. Students understand how to interpret and develop scientific concepts and how these ultimately are used to create policy (e.g, insurance rates for homes and buildings in a floodplain, building codes for earthquakes, or defensible area from wildfires). This course promotes national STEM learning objectives that ensure we effectively communicate the use science, math, and engineering in society (e.g., interpretation of maps and graphs with quantitative analysis).

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f:/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CJHkV5-rKUrpNEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 21 2019



### Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### 3A- GEOL 1110-1110L Physical Geology & Lab \_Ex Asses 1 -WNMU

Filename: 3A-\_GEOL\_1110-1110L\_Physical\_Geology\_\_\_UVEwPrv.pdf Size: 400.6 kB



### Upload Rubric

Completed - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### 2- GEOL 1110-1110L Physical Geology & Lab -Syllabus -WNMU

Filename: 2-\_GEOL\_1110-1110L\_Physical\_Geology\_\_L\_5Q8PJiq.pdf Size: 1.1 MB

## Application: 0000000197

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Roene Neu
Title	Professor of Geology
Phone	5754922813
Email	rneu@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	GE
Number	224
Title	Ocean Studies
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	GE
Number	224L
Title (if applicable)	Ocean Studies Lab

## New Mexico Common Course Information

Prefix	GEO
Number	2120C
Name	Introduction to Oceanography

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

#### Student Learning Outcomes

1. Recognize, describe or explain vocabulary, principles and methods relative to the science of oceanography.
2. Recognize, describe or compare Earth's components, especially the physical and chemical properties of seawater, marine sediments, and ocean life.
3. Recognize, describe, or explain the interrelationships of oceans with other Earth systems and the influences of physical processes on the ocean floor and coastal features.
4. Evaluate and interpret basic information from maps, diagrams, remotely sensed images, graphs and tables.
5. Apply critical thinking skills to solve problems.
6. Recognize or discuss the effects of human activity on marine environments and ecosystems.



## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical Thinking skills are developed through classroom activities, homework assignments, and lab exercises. All labs require critical thinking skills in which students are required to make observations, this may be of ocean and earth systems, oceans basin and tectonics, properties of the ocean waters, marine sediments, oceans relation to atmosphere and climate, etc. An example would be with the seawater temperature, salinity, and density lab. Students to look at the relation of density to seawater temperature and salinity. They are required to acquire data from temperature-salinity diagrams and maps, which they then evaluated to determine how density is effected by seawater temperature and salinity, this was then used with salinity maps to determine what various processes govern salinity of ocean waters and for what reasons, and finally help students conclude and describe what the general patterns of sea-surface temperature and salinity are.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning is essential in for solving problems and understanding oceanography. Students focus on methods for quantitative data exploration and hypothesis testing with many of their lab assignments. Students are often required to use mathematical skills to analyze and interpret real-world quantitative information in the context of oceanography to draw conclusions that are relevant to students in their daily lives.

Students communicate or represent quantitative data through several means including graphing, modeling and even written discussions. Students analyze quantitative data to understand real-world problems. For example, students look at Arctic sea ice and decades of melting and its major climatic implications. This is done by studying monthly sea ice extents from 1979 to 2015 followed by reviewing data on the sea ice volumes from the same time span. This information was then analyzed to determine the percent changes in ice volumes, this information was then also used to determine possible future changes.

The use of quantitative analysis, models, and communication of this data is applied to weekly lab assignment. In classroom lectures/discussions diagrams, charts, and graphs are all analyzed and students understanding of the material is evaluated on chapter exams.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and social responsibilities are large part of the course. Students by studying oceanography become aware as concerned citizens of how our oceans impact the earth systems and ourselves, and how we have an impact on the oceans. Students are learning how small changes have influenced our planet and how those changes have influence the environment and life on this planet through geologic time.

Students are introduced to national policies regarding the oceans and their boundaries. Students partake in group discussions and investigate through labs how national and international ocean policy promote wise stewardship of the world oceans, the human impact in the coastal zones (such as environmental pollution, release of oil, hazardous waste release, impact of dams on marine habitats), obstacles to ocean policy making in the United States as well as on an international level, and more.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000112

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



Application Form

Completed - Mar 19 2019

## Application Form

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

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### Contact Information

Name	Don Scroggins/Alexandra Schipani
Title	Division Chair/Adjunct Professor
Phone	5757694909
Email	don.scroggins@clovis.edu/alexandra.schipani@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Anthropolgy

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	ANTH
Number	243
Title	Introduction to Cultural Anthropology
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	n/a
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ANTH
Number	1140
Name	Introduction to Cultural Anthropology

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

**Student Learning Outcomes**

1. Introduce students to the basic concepts and research methods of cultural anthropology as one of the disciplines of social science, including fundamental concepts, such as culture and society, which form the pillars of the discipline (e.g., cultural relativism, cultural persistence and change, world-view and enculturation).
2. Comprehend the importance of studying cultural anthropology.
3. Demonstrate knowledge of the practice of anthropological research in the modern world that is increasingly multicultural, transnational and globally interconnected (e.g., globalization and modern world system).
4. Demonstrate an awareness of how students' own cultures shape their experiences and the way they see the world, as well as help them understand and interact with other cultures.
5. Understand how beliefs, values and assumptions are influenced by culture, biology, history, economic, and social structures.
6. Gain a sense of relationship with people possessing different experiences from their own.
7. Gain a deeper understanding and appreciation for cultural anthropology as a broad discipline through learning about its practices, and differentiating cultural anthropology from other disciplines that study.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Discussion boards: Each week throughout the semester students are required to participate in online discussion board. The format of the board is each week a prompt is given that requires students to use what they have learned during the week and apply it to a real-life question. Students are required to post their first response by Thursday and then reply to two classmates by Sunday. In order to be successful in the discussions, students need to review all course materials including weekly readings, weekly powerpoints, and sometimes videos. Students' communication skills are assessed based on the content of their posts as well as their ability to perpetuate the conversation in a meaningful way.

Final Paper: Students are required to write a final paper that addresses the ethnography the students have been reading and the class lessons. Students must clearly explain a topic we have covered in class this semester and then explain how that topic is present in the ethnography. This requires clear written communication, as students need to make complex connections between the stories in the ethnographies and the lessons they have learned throughout the semester. A rubric that students may reference is used to assess the final paper.



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Final Paper: Students are required to read an ethnography throughout the entire semester. At the end of the semester, the students must choose a topic that we have discussed and explain how that concept is evident in the ethnography. This process requires students to acquire evidence about the lessons we have learned, evaluate the evidence, and apply sound reasoning leading to a logical conclusion as it pertains to the book we have read. Additional research is often conducted in order to thoroughly explain the topics. The final paper is assessed using a rubric that students may reference.

***Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Discussion boards: The discussion boards all have a personal element to them. They persist throughout the semester and ask for the students' opinions on topics we have discussed. Some of these topics have a reputation for creating conflict. For example, we discuss: gender roles, sexuality, globalization, human rights, and more. Students must share their thoughts on the discussion board in a respectful manner and often reply to students who have a different outlook. The goal of the course is not change anyone's perspective but rather expose students to other ways of life in other parts of the world. Students learn to be respectful of others and be open to new ideas but also need to balance that with their beliefs. The discussion boards are assessed with a rubric that students reference.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 19 2019



### Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### ANTH 1140 Sample Assignments

Filename: ANTH\_1140\_Sample\_Assignments.docx Size: 16.8 kB



### Upload Rubric

Completed - Mar 19 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### ANTH 1140 Syllabus

Filename: ANTH\_1140\_Syllabus.docx Size: 35.2 kB

## Application: 0000000056

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 15 2019

## Application Form

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## Essential Skills

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

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### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	505 428-1769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Arts

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

## Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	ARTS
Number	1631
Title	Drawing Media: Ancient and Contemporary
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ARTS
Number	1631
Name	Drawing Media: Ancient and Contemporary

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Solid understanding of the materials used to make a variety of types of paints, grounds, and supports
2. Gain the ability to problem solve compatibility questions related to the materials used within a painting
3. Understand through experience, the basic craft issues related to a variety of paint media.
4. Broaden their understanding of what is possible in painting through experience of a variety of paint media and mixed media techniques.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Demonstrate safe studio practice related to the storage and handling of materials and equipment

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

**Genre and Medium Awareness, Application and Versatility**

Students gain a hands-on foundational understanding of painting as a medium of communication of visual messages by working with the basic material components of paint (pigments and vehicles) and of paint surfaces (supports and grounds). Students make four types of paint and a variety of paint surfaces using powdered pigments, liquid vehicles, glues and emulsions. They identify the applicability of these materials to various painting genres such as traditional value- based images, decorative color and pattern, and abstract painting.

Students apply technical and material strategies, based on the visual limits of different types of paint, paint surfaces, and the inherent characteristics of different paint pigments, to decide how they will construct their painting in order to fulfill a particular assignment. They solve issues of material compatibility, as well as which type of paint and related technique might be best suited to a specific type of visual message, or functional use.

**Strategies for Understanding and Evaluation Messages**

Students apply strategies for evaluating visual messages inherent in their painting and in the paintings of their classmates. Thus, they must have a strategy for conveying, understanding, and evaluating their visual image (aka visual message). There are frequent informal critiques where projects are discussed and students learn to understand and evaluate the visual messages created by fellow students in the class.

**Evaluation and Production of Arguments**

Students evaluate their success in the communication of form and light, as well as the use of each paint material. They evaluate the relative success of their intended visual message using a variety of painting techniques and materials.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students complete an assignment related to each type of paint and painting technique, determining how to best use each technique to convey their intended visual message. Students work with the materials and equipment in the studio to acquire and evaluate evidence to solve material problems that arise such as cracking or flaking of the paint or ground surface, adhesion problems, changes in color or value related to the application of heat, and other material problems. Because this is a course about materials, the problems, evidence, evaluation, and conclusion are largely material based. In a project in the second half of the course, students create a new type of paint pigment or vehicle. Students research the requirements of these materials, testing and different substances and evaluating qualities such as adhesion, stability, and toxicity. They solve compatibility or other types of material problems. They decide in conclusion, that a material is or is not suitable as a pigment or a vehicle, based on their evaluation of evidence.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds

Students practice safe, sustainable and ethical studio practice. Some of the materials they work are chronically toxic and must be handled and disposed of correctly. Students research and use SDS (Safety Data Sheets) for materials related to painting. They follow best practices for the handling and disposal of materials as well as which materials should be avoided for sustainable studio practice.

Collaboration skills, teamwork and value systems

Students collaborate in the creation of particular painting surfaces (grounds and supports) and painting materials such as mediums. These aspects of painting require planning, teamwork and patience. In group critique students verbalize the strengths and weaknesses of the work of their fellow classmates, thus taking on the responsibility for assisting in each other's improvement in the application of materials and techniques and in the use of a variety of painting genre as a versatile medium of communication.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 14 2019



Upload Assessment

Completed - Mar 14 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## ARTS 1631

Filename: ARTS\_1631.\_sample\_course\_assignment.E\_UblVcal.docx Size: 16.1 kB



### Upload Rubric

Completed - Mar 14 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## ARTS 1631Painting Media

Filename: ARTS\_1631Painting\_Media.\_Sample\_Rubric.docx Size: 13.7 kB

## Application: 0000000147

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	EN
Number	213B
Title	Creative Writing
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	ENGL
Number	2310
Name	Introduction to Creative Writing

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Participate in a constructive conversation and community about creative writing.
2. Read and critically engage with a variety of texts.
3. Compose creative works in various genres of creative writing.
4. Provide respectful, honest, and critical feedback to peers about their work.
5. Revise creative work based on peer feedback and critique.
6. Develop thoughtful workshop reflection on students' own writing and writing process.
7. Evaluate and engage with publication process.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Instructors provide instruction on critical thinking skills related to reading, writing, and research throughout the course. Students analyze readings, including fiction, poetry, plays, and nonfiction. With guidance from the instructor, learners engage in dialogue to interpret the readings while also discussing the cultural and historical significance of the texts.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine. Students use secondary sources as evidence in analyzing primary sources (works of literature) in a research project related to the production of creative writing

Reasoning/Conclusion: Students use support and evidence from primary and secondary sources to defend a main idea statement while avoiding common logical fallacies. Students also practice critical analysis by commenting on each other's rough drafts for creative works and the research project. Students apply what they learn from reading to the production of their own creative works.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students can identify and analyze personal and social justice issues in a variety of texts, including a diversity of social and cultural contexts while showing an awareness of these issues in their own creative pieces.

Ethical reasoning: Students analyze texts for ethical thought and action, including individual actions of characters and separating individual character thought and action from the commentary and thematic implications offered by the text as a whole. Students discuss the consumption and production of literature as a social activity that reflects, promotes, and critiques values while comparing and contrasting these perspectives with belief systems currently operating in the world and in their own creative work.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments.

Civic discourse, civic knowledge and engagement – local and global: Students analyze works of literature to determine the cultural, racial, economic, or political factors present in the work. They diplomatically engage in dialogue concerning these topics, recognizing the factors that shape literary production, including their own, as well as analysis of literature itself.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The research project in this course is the centerpiece assignment and is worth 25% of the term grade. Instructors present students with lessons on finding, evaluating, and citing sources in analytical and argumentative writing. Avoiding plagiarism through ethical use of sources and citation is a key topic. Instructors require the use of professional sources from reputable publishers and peer reviewed journals. Student work on both the research project and creative assignments are evaluated for ethical use of sources and originality with Turnitin. Instructors offer guidance on interpreting Turnitin reports to help students responsibly and ethically cite sources.

Digital Literacy: Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers. Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the research paper.

Information Structure: Students practice paraphrasing and summarizing information from professional secondary sources. Students integrate multiple primary and secondary sources into a research paper structured around a developed thesis statement and topic sentences in MLA format.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis of the literary work in question.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019





## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### EN213B Assessment

Filename: EN213B\_Assessment.docx Size: 13.9 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000182

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy

2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Illya Medina Velo,
Title	Assistant Professor of Chemistry
Phone	(575) 538-6564
Email	iamedinavelo@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

## Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	CHEM
Number	1120
Title	Introduction to Chemistry
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	CHEM
Number	1120L
Title (if applicable)	Introduction to Chemistry Lab

## New Mexico Common Course Information

Prefix	CHEM
Number	1120, 1120L
Name	Introduction to Chemistry

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for CHEM 1120, Introduction to Chemistry/ CHEM 1120L, Introduction to Chemistry Lab

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

- Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements
- Identify elements from their name or symbol; use the periodic table to describe reactivity patterns of elements and to predict compound formation.
- Describe the basic structure of an atom using subatomic particles, and apply these concepts to nuclear reactions.
- Describe ion formation and the difference between covalent and ionic compounds. Name and write formulas for ionic and simple molecular compounds.
- Write and balance chemical reactions. Use balanced reactions in stoichiometric calculations.
- Describe the differences between the solid, liquid and gas phases. Use the gas laws in calculations, and apply these laws to everyday situations.
- Explain different types of energy, and how energy is released or absorbed in a reaction
- Describe acid and base behavior and the nature of buffer solutions

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Introduction to Chemistry covers topics that develop critical thinking in students. Examples that are associated with the essential skill of critical thinking include:

**Problem Setting:**

Students learn to (i) use the scientific method for everyday problems (ii) identify substances as chemicals and classify examples of matter (iii) convert measurements of volume, length, mass, temperature, and time using dimensional analysis; (iv) calculate energy from food and systems using the concept of heat capacity; (v) calculate theoretical reaction yields (vi) find the concentration of solutions; (vii) calculate chemical quantities; (viii) name ionic and molecular compounds; (ix) identify acids and base and relate the with the concept of pH.

**Evidence Acquisition:**

Students gather information to (i) identify the trends in the periodic table; (ii) describe radiation and the use of radioisotopes in medicine; (iii) balance chemical reactions; (iv) describe the properties of gases and their behavior based on gases' laws. In the laboratory, students are able to collect the data to address the problem settings. E.g. measurement of volume and weight for density calculations and distinguish the nature of matter.

**Evidence Evaluation:**

Based in available information and work experience (a large number of students have it), students are sometimes able to (i) describe radiation and the use of radioisotopes in medicine. In the laboratory, students are able to identify inconsistencies between theoretical and experimental data. E.g. determination of a chemical formula experimentally.

**Reasoning and Conclusion:**

Students can compare the information available in books and online sources with the one gathered in the laboratory, which allows them to build their own arguments about the scientific method. E.g. Ease of synthesis of soap from hydrophilic and hydrophobic components as compared to commercial production.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Introduction to Chemistry covers topics that develop quantitative reasoning in students. Examples that are associated with the essential skill of quantitative reasoning include:

**Communication/Representation of Quantitative Information:**

Students translate chemical and mathematical symbolisms into oral and written arguments of real-life situations. E.g. (i) use of prefixes in measurements; (ii) dimensional analysis used to convert measurements, calculating reaction yields, chemical quantities; (iii) obtaining significant information from the periodic table; (iv) gas laws that provide relationships between pressure, volume, temperature, number of moles.

**Analysis of Quantitative Arguments:**

Students can compare the information available in books and online sources with the one gathered in the laboratory, which allows them to build their own arguments about the scientific method. E.g. (i) Cost and ease of synthesis of soap from hydrophilic and hydrophobic components as compared to commercial production.

**Application of Quantitative Models:**

Students identify mathematical or statistical models to summarize quantitative information gathered during laboratory experiments. E.g. (i) determination of a chemical formula experimentally; (ii) identification of matter with density measurements; (iii) balancing chemical equations.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the Natural and Human Worlds:

Students examine the relationship among science and technology as they learn basic concepts such as matter, energy, chemical compounds, gases, and their applications to improve the quality of life. E.g. Ongoing environment issues and the role of chemistry in solving them is discussed. The role of chemistry in understanding the changes in nature (e.g. measuring the pH of acid rain, mechanism behind the acid rains) is emphasized.

Collaboration Skills, Teamwork, and Value Systems:

Students take advantage of individual strengths by working in groups to solve in-class assignments and during the performance of laboratory experiments. Students effectively complete a group project in Nuclear Chemistry which includes self-evaluation, evaluation by peers, and by the instructor.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f:/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CJHkV5-rKUrPnEBVUkNjaJPSJAaorjVjhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.



### 3 -CHEM 1120-1120L Intro to Chemistry & Lab -Asses-WNMU

Filename: 3\_-CHEM\_1120-1120L\_Intro\_\_to\_Chemistr\_M6pH5f4.docx Size: 201.3 kB



Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### 2 -CHEM 1120-1120L Intro to Chemistry & Lab -Syllabus -WNMU

Filename: 2\_-CHEM\_1120-1120L\_Intro\_to\_Chemistry\_xb1A5ft.docx Size: 104.4 kB

**Application: 0000000235**

Stephen Mathewson - smathewson@cnm.edu  
NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

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## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Aaron Wilson
Title	Full Time Math Faculty
Phone	(505) 224-4000 x52751
Email	awilson59@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	MSE

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	MATH
Number	1220
Title	College Algebra
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	MATH
Number	1220
Name	College Algebra

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Students will build on their knowledge of polynomial, rational, absolute value, radical, exponential, and logarithmic functions in the following contexts:

1. Identify functions and their transformations given in algebraic, graphical, numerical, and verbal representations, and explain the connections between these representations.
2. Graph and interpret key features of functions, e.g., intercepts, leading term, end behavior, and asymptotes.
3. Solve equations algebraically to answer questions about graphs, and use graphs to estimate solutions to equations.
4. Solve contextual problems by identifying the appropriate type of function given the context and creating a formula based on the information given.
5. Communicate mathematical information using proper notation and verbal explanations.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Use function notation; perform function arithmetic, including composition; find inverse functions; and determine the domain and range of functions algebraically and graphically

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Each student will be tasked with completing a short project (see the attached). It will describe a set of circumstances and a goal. Students will be assessed on their genre and medium awareness, through an online class discussion forum, when they discuss what type of function might be applied to model these circumstances, what strategies they will use to understand and evaluate the stated goal (see SLO 5), and why they chose that model by citing relevant sources. Further, students will read and provide feedback on a peer's choice of model and approach. They will be assessed on their ability to evaluate and produce arguments with their peers in a constructive manner, supporting their decisions or providing alternatives while citing appropriate sources. Students will then implement their designed plan and provide a written explanation of their process and conclusions. They will be assessed on their ability to support their decisions by citing relevant sources, on their use of appropriate mathematical notation and organization combined with written explanations of the steps they took to achieve the stated goal, and on their own assessment of the validity of their result and its importance in the context of the stated goal.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

All sections of all chapters will involve critical thinking in some way. Each problem they are presented with will require them to problem set as they read and understand the stated goal, acquire appropriate evidence about the mathematical technique for achieving that goal (often from among multiple techniques that may be applicable), apply that technique, evaluate evidence for the validity of their result (by checking their solution or verifying it is reasonable in the context of an application), and state their conclusion. This is the nature of both abstract and applied mathematical problems and this course will develop them throughout. Special consideration will be paid to the beginning and end of this process as, even if students are very capable of manipulating expressions and equations, they often struggle with reading a problem statement and deciding what technique(s) might be applied, and with assessing whether their conclusions are reasonable. This will be achieved through problem-recognition exercises, where students are presented with a wide variety of similar problems from throughout the course and tasked with classifying them by the methods that may be used to achieve a solution, and through a close examination of erroneous solutions and discussions of how students can recognize that an error has occurred and use that recognition to aid in seeking out the error. Students will be assessed on these skills in every assignment, in addition to the projects described above, where they will be asked to be explicit about their reasoning the assessment of the validity of their conclusions.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

This course explicitly develops a student's ability to link quantitative models to graphical representations – in graphing linear, quadratic, polynomial, rational, radical, exponential, and logarithmic functions and their transformations. Students will be assessed on their ability to translate between abstract representations of a function and written descriptions of the transformations that have been applied and produce a graphical representation of the function. Many rules that are developed in the course have justifications that depend on numeracy and quantitative reasoning. For example, division of a number by increasingly smaller values gives larger and larger results. We present a rule that states that values of a variable that make a denominator zero will result in a vertical asymptote in the graph. Students are assessed on their ability to apply and justify this rule, linking abstract representations of a function to numeracy and the graphical representation. Students will then be assessed on their ability to apply this function as a model in contextual problems.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

MATH1220\_project03draft

Filename: MATH1220\_project03draft.pdf Size: 45.7 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000159

Janett Johnson - janett.johnson@clovis.edu  
NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

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The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.



# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

## Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

## Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	HIST
Number	203
Title	New Mexico History
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	HIST
Number	2110
Name	Survey of New Mexico

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- 1) Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries of New Mexico history from pre-Columbian times to the present day.
- 2) Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.
- 3) Students will summarize and appraise different historical interpretations and evidence in order to construct past events.
- 4) Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluate credibility, perspective, and relevance.
- 5) Students will create well-supported historical arguments and narratives that demonstrate an awareness of audience.
- 6) Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Across the semesters, students will analyze and critically interpret significant primary texts and/or works of art. Emphasis will be placed in these visual and written materials upon key elements and drivers of the social, economic, and cultural institutions that shape New Mexico History. These could include the role of the original Native Americans in the region, their interactions with Spanish Exploration, the sweeping changes wrought through Spanish Colonization and the eventual American takeover, and the eventual unique social, cultural, and economic institutions that emerge into the modern era. In addition, concentration upon the religious and ideological belief systems that form world view of the Native Americans, the Spaniards, and the Americans that drive the development of the modern political, social, economic, and cultural landscape of Modern New Mexico and its people. In assessment, all students will take a comprehensive and objective final exam. Every multiple-choice question on the exam will be linked to one or more of the course objectives that address the area state competencies. Questions on the final exam will be based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. All exam questions will come from weekly unit quizzes and the midterm exam taken during the semester. Particular emphasis will be placed in lectures, written assignments and visual materials will be placed upon key elements of social, economic, and cultural institutions that are the drivers of New Mexico's history, in conjunction with lecture/reading outlines, documentary films, YouTube clips, and weekly review sessions to create an incremental sequence of student comprehension of the course objectives and competencies. Students will analyze how the region of New Mexico was transformed from early Native American life to the unique multi-cultural and highly varied state it is today.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives to identify the individual role of economy, society, government, religion, and culture in the history of the U.S. (and New Mexico) during the semester. The thematic concentration of the material particularly is focused upon ideas and traits related to social institutions, internal and external factors that influence the understanding of the present as related to an awareness of past heritages in the history of New Mexico, the nature and importance of belief systems in forming behavior and social mores, and how these systems are embedded in laws and social institutions – as related to the development of New Mexico from its Native American inception through the contemporary era. In detail, students will discuss the factors and influences that combined to create the unique culture and history of New Mexico: influence of the landforms, the Native Americans, the Spaniards, the Americans and the United States, and how the region was transformed over time in a social, cultural, economic and political sense. Students will analyze the development of pre-Columbian indigenous culture, the clash of worlds when the Spaniards arrived, the development of a Spanish Colonial Configuration, and the eventual introduction of American ways and systems that in turn are also changed by the institutions, cultures, and ways of the peoples from the past. Students will trace the how Native Americans and Spanish cultures first collided and later formed a new mixed racial configuration with attributes of both cultures, and how this is blended again with the appearance of the American settlers and their institutions, laws, and culture. Students will explain the impact of cultural resistance, racial mixing, cultural assimilation and transformation as key drivers of long history and emerging modern culture of New Mexico.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

In this course, students will be exposed to and required to use a range of digital platforms and media sources, including PowerPoint slide presentations, historical maps, primary documents, historical documentaries, YouTube video clips, subject related websites, and a host of other digital venues to reinforce visually the contextual basis of ideas, events, and trends discussed during the semester. These tools will be implemented in this course through various means in the face to face classroom environment, the Interactive Television platform, and through the Canvas Digital Learning platform and its many digital capabilities. Students will learn the basic computer skills, technological steps, and platform skills to access a course shell within Canvas in all classes to access the above mentioned digital course materials, as well as listen to and observe specially-created recorded lectures by the instructor using Camtasia digital video technology. Also, within the Canvas course shell, students will also utilize exam and quiz study guides, practice quizzes, written assignments, and student-driven threaded discussions questions that allow interaction with fellow classmates and the instructor. Dual enrollment students, in an ITV setting, will be able to see, interact, and discuss with each other and the instructor during each class.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## HIST 203-HIST 2110 Outcome Assessment

Filename: HIST\_203-HIST\_2110\_Outcome\_Assessment.pdf Size: 362.8 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## HIST 203-HIST 2110 Syllabus

Filename: HIST\_203-HIST\_2110\_Syllabus.pdf Size: 95.7 kB

## Application: 0000000215

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

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## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

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### Contact Information

Name	Don Scroggins/Joy Newton
Title	Division Chair/Full time Professor
Phone	5757694909/5757694931
Email	don.scroggins@clovis.edu / newtonj@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No



## Institutional Course Information

Prefix	BIOL
Number	115
Title	Human Biology and Lab
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	n/a
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	BIOL
Number	1130C
Name	Introductory Anatomy and Physiology Lecture and Lab (non-majors)

## A. Content Area and Essential Skills

### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Student Learning Outcomes: (Lecture)

1. Define and explain anatomy and physiology.
2. Use anatomic directional, regional, and sectional terminology related to the human body.
3. Explain and describe the basic chemical principals of the human body including the structure and function of carbohydrates, lipids, proteins and nucleic acids.
4. Develop a basic familiarity with cells and cell organelles that include cell division, DNA replication, and protein synthesis.
5. Describe the structure and function of the major tissues in the human body.
6. Identify and describe the basic anatomical features of the integumentary, skeletal, muscle, nervous, endocrine, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive systems.
7. Describe the basic physiological roles of the integumentary, skeletal, muscle, nervous, endocrine, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive systems.
8. Apply and describe the principals of homeostasis in the human body.

Student Learning Outcomes: (Laboratory)

1. Use and apply proper anatomic terms
2. Develop skills using the microscope correctly.
3. Identify basic tissue types.
4. Discuss and describe the basic anatomical features of the integumentary, skeletal, muscle, nervous, endocrine, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive systems.
5. Demonstrate and describe physiological roles of the integumentary, skeletal, muscle, nervous, endocrine, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive systems.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

The problem setting that students encounter across the semester is learning and using the scientific method as it applies to human anatomy and physiology. Students will be assessed by their lab results completed before, during, and after experimentation. Evidence acquisition will take place in a laboratory setting as students support concepts of homeostasis by critically examining normal human physiology. Students learn reasoning and conclusion skills through interpretation of lab results and ability to apply scientific knowledge to unknown biological situations. Reasoning and conclusion skills are assessed through in-class and lab assignments and formal course exams. Critical thinking skills will be further assessed through both multiple choice and essay questions in exams.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will learn communication of quantitative information throughout the course with discussions of case studies and homeostatic imbalances concerning human anatomy and physiology. Students will learn to represent data during collection and presentation of data in tabular and graphical form during lab experiments. Students will learn to analyze quantitative information by working with sample data sets or data they collect as part of a lab exercise. Application of quantitative models will take place in a laboratory setting. Quantitative reasoning skills will be assessed through lab reports, discussion forums, and formal course exams.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Throughout the entire semester, students will examine human culture in the context of human anatomy and physiology, the impacts of physical, chemical and environmental conditions on human biology and health, including sustainable practice, especially in the medical arena. Students will learn ethical reasoning skills during class discussions concerning human health and applicable current research. Students will discuss the human species, physiological needs, causes and ecology of human diseases and the implications of humans as drivers of environmental, human health, and biological change. Collaboration skills, teamwork, and value systems are developed throughout the course as students are required to work with one another to learn the anatomy of the body and use their combined skills towards civic engagement. Assessment will occur via formal written exams and discussion forums.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



**Upload Assessment**

**Completed** - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**Sample Assessments BIOL 115**

**Filename:** Sample\_Assessments\_BIOL\_115.zip **Size:** 936.8 kB



**Upload Rubric**

**Completed** - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**BIOL 115 Syllabus ARTH Spring 2019-2**

**Filename:** BIOL\_115\_Syllabus\_ARTH\_Spring\_2019-2.docx **Size:** 7.4 MB

**Application: 0000000032**

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 13 2019

**Application Form**

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assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
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### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	BIOL
Number	2410
Title	Principles of Biology: Genetics
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	BIOL
Number	2410L
Title (if applicable)	Principles of Biology: Genetics Laboratory

## New Mexico Common Course Information

Prefix	BIOL
Number	2410
Name	Principles of Biology: Genetics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes



**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will be able to understand rules governing the segregation of genes carried on the same or different chromosomes.
2. Students will be able to explain and analyze human pedigrees.
3. Students will be able to describe the structure of DNA and how its information is transmitted to protein synthesis.
4. Students will be able to interpret scientific data, formulate a scientific hypothesis, and propose an experiment to test a scientific hypothesis.
5. Students will be able to describe molecular mechanisms governing why and how gene expression is regulated
6. Students will understand how deregulated gene expression contributes to human congenital disease and cancer.
7. Students will be able to understand how highthroughput experiments are carried out and analyzed.
8. Students will be able to explain key principles of genomics to understand the content, organization, and function of genetic information contained in whole genomes.
9. Students will be able to apply genetic and physical mapping techniques to the understanding of structural genomics.
10. Students will be able to use comparative genomics to understand how genomes evolve in (i) genome size, (ii) gene content, (iii) gene functionality, (iv) nucleotide base content, (v) protein diversity, and/or (vi) transposable element proliferation.
11. Students will consider ethical issues related to genomics.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Critical thinking is crucial when evaluating genetic information provided to a genetic counselor. Critical thinking is assessed during the study of Mendelian Genetics. An example is provided in Appendix One. In this exam question the problem (what to advise a couple planning to procreate) is delineated (problem setting). Data is provided so that the student can construct a pedigree diagram for the male and female patients (evidence acquisition). The genetic evidence is evaluated in terms of reliability (in this case the data is likely to be accurate) (evidence evaluation), but the “student counselor” may wish to ask the patients about how reliable their information is. From the data the student should be able to think critically in advising the first couple to “not worry” (reasoning/conclusion). In the second case the student will need to use knowledge of probability to explain the need to screen the woman to determine if she is a carrier of Duchenne’s muscular dystrophy (reasoning/conclusion).

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning is assessed during the study of Mendelian Genetics. Students learn to use mathematical calculations to determine the probability of inheriting certain genetic diseases. An example is provided in Appendix Two. On this exam question students are required to present information in the form of a Punnett square using symbols for certain Mendelian traits in Klingons (representation of quantitative information). Students are then assessed regarding their ability to analyze the data to determine the four phenotypes that a particular mating has produced (analysis). The ratio of the phenotypes can be determined from the Punnett square (application). This 9:3:3:1 ratio is typical of a dihybrid cross. Students need to apply their knowledge of homozygosity and heterozygosity when analyzing the Punnett square to answer the final two questions. Klingons may be in another world, but the final questions relate nicely to our real world of human genetics (application of quantitative models).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and social responsibility is assessed by evaluating the quality of individual student presentations on a specific genetic disease (see appendix three). Students are encouraged to not select a disease that is routinely discussed in class such as sickle cell anemia, Down's syndrome, and cystic fibrosis. With fewer than 15 students in the class, there are plenty of interesting genetic diseases to choose. Five percent of the student's final grade is based on their 15-20 minute oral presentation and another 5% is based on the quality of a handout they must produce for their fellow students. This handout contains a description of the important features of the disease, its inheritance pattern and treatment. Peer-reviewed articles must be cited and two multiple choice questions must be written about the disease. Some of these questions are used on the final lecture exam. The global (medical) significance (natural and human worlds) of the disease and the role of teamwork (teamwork and value systems) in the pursuit of our scientific understanding of the genetic disease are often addressed. Issues such as genetic screening, the use of amniocentesis, use of fetal tissue for testing, genetic engineering and gene therapy as well as the role of ethics (ethical reasoning) during genetic counseling are introduced (civic discourse, civic knowledge and engagement).

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 10 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## BIOL 2410 assignment

Filename: BIOL\_2410\_assignment.pdf Size: 238.5 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000151

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

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### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	EN
Number	223A
Title	Survey of British Literature II
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	2640
Name	British Literature II

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Read and discuss representative works of British writers from the 18th century to the present to understand cultural and historical movements which influenced those writers and their works .
2. Identify the characteristics of various British literary genres, such as the essay, novel, short story, poetry, and dramatic literature.
3. Apply effective analytic and interpretive strategies to British literary works using academic conventions of citation and style.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Instructors provide instruction on critical thinking skills related to reading, writing, and research

throughout the course. Students analyze readings, including fiction, poetry, plays, and nonfiction. With guidance from the instructor, learners engage in dialogue to interpret the readings while also discussing the cultural and historical significance of the texts.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine. Students use secondary sources as evidence in analyzing primary sources (works of literature) in a research paper.

Reasoning/Conclusion: Students use support and evidence from primary and secondary sources to defend a thesis

statement while avoiding common logical fallacies. Students also practice critical analysis by commenting on each

other's rough drafts for essays and the research paper.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students can identify and analyze personal and social justice

issues in a variety of texts, including a diversity of social and cultural contexts.

Ethical reasoning: Students analyze texts for ethical thought and action, including individual actions of characters and separating individual character thought and action from the commentary and thematic implications offered by the text as a whole. Students discuss literature as a social activity that reflects, promotes, and critiques values while comparing and contrasting these perspectives with belief systems currently operating in the world.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact

and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments. Instructors provide students with local opportunities to interact and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The research paper in this course is the centerpiece assignment and is worth a minimum of 30% in all sections. Instructors present students with lessons on finding, evaluating, and citing sources in analytical and argumentative writing. Avoiding plagiarism through ethical use of sources and citation is a key topic.

Instructors require the use of professional sources from reputable publishers and peer reviewed journals. Student work is evaluated for ethical use of sources with Turnitin. Instructors offer guidance on interpreting Turnitin reports to help students responsibly and ethically cite sources.

Digital Literacy: Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers.

Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the research paper.

Information Structure: Students practice paraphrasing and summarizing information from professional secondary sources. Students integrate multiple primary and secondary sources into a research paper structured around a developed thesis statement and topic sentences in MLA format.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis of the literary work in question.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### EN223 Assessment

Filename: EN223\_Assessment\_q00tiNw.doc Size: 737.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000079**

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 18 2019

#### Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Katherine Goad
Title	Professor of Biology
Phone	575-492-2818
Email	kgoad@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	Bi
Number	224
Title	Microbiology
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	BIOL
Number	2310C
Name	Microbiology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

### Lecture Student Learning Outcomes:

1. Describe and compare the structure and function of prokaryotic and eukaryotic cells.
2. Describe and compare the techniques used for staining of and microscopic observation of bacteria including morphology.
3. Describe the nutritional requirements for bacterial growth and the impact of environmental factors on bacterial growth (temperature, pH, oxygen, etc.).
4. Describe and compare the mechanisms of aerobic respiration, anaerobic respiration, and fermentative metabolism.
5. Describe the mechanism of bacterial growth by binary fission, and laboratory methods used for observing and measuring bacterial growth.
6. Describe the mechanisms of bacterial DNA replication, RNA transcription, and translation, and compare and contrast with eukaryotic cells.
7. Describe the structure and replication strategies of viruses.
8. Describe and contrast mechanisms of innate nonspecific immunity and adaptive specific immunity.
9. Describe immune hypersensitivity reactions, autoimmune diseases, and immunodeficiency diseases.
10. Differentiate between host microbe relationships, mechanisms of microbial pathogenesis, differentiate between communicable and non-communicable diseases and describe mechanisms of direct and indirect transmission of communicable.

### Laboratory Student Learning Outcomes:

1. Demonstrate skills of microscopy.
2. Demonstrate skills of bacterial staining.
3. Demonstrate aseptic technique for inoculation of bacterial growth media.
4. Interpret results from selective and differential media.
5. Demonstrate appropriate use of diagnostic reagents.
6. Interpret results of diagnostic assays.
7. Identify unknown bacterial species through the use of a dichotomous key, inoculation and interpretation of laboratory assays, and application of the scientific method.



## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The concept of scientific inquiry is reinforced throughout the semester primarily with case studies and laboratory activities. This strengthens students' ability to critically think via problem-solving assignments. Case Studies are primarily embedded and assessed within lecture exams, particularly within the units dealing with infectious diseases associated with body systems. Students are provided information regarding a specific situation. They are required to analyze and interpret the data provided in order to determine the causative agent. The majority of laboratory activities throughout the course require students to evaluate laboratory results and draw conclusions. Evaluation of this essential skill is via performance on laboratory reports.

Examples of Laboratory Activities:

1. Diversity of Microbial Life exercise requires students to identify and classify various micro-organisms. Based on their observations, they formulate a conclusion to which taxonomic category they belong.
2. Disk-diffusion Sensitivity Testing exercise requires students to determine the effectiveness of particular antibiotics on Gram-positive and Gram-negative bacteria. Based on their data collected, they conclude whether the organism is sensitive, intermediate, or resistant to that particular chemotherapeutic agent.
3. Identification of Unknowns exercise requires students to ascertain the identity of bacteria based on their collection of data and interpretation of various biochemical reactions.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

The concept that students need to be able to communicate conclusions drawn from interpretation of quantitative data and to relevantly apply this information to real world is primarily stressed in the laboratory component. Assessment of the students' skill level is by performance on lab reports. Examples of laboratory activities used to strengthen students' quantitative analysis skill includes the following:

1. Disk-diffusion Sensitivity Testing exercise requires students to determine the effectiveness of particular antibiotics. Students measure the diameter of inhibition zones in millimeters and interpret the results using charts provided by NCCLS (National Committee for Clinical Laboratory Standards).
2. Identification of Gram-positive Bacteria exercise requires the collection of data from various biochemical tests: catalase, coagulase, oxidase. Students use their data to generate a dichotomous key which is to be later used in their identification of an unknown bacteria.
3. Identification of Gram-negative Bacteria exercise requires students to analyze data they collect from a variety of biochemical tests, place the data in chart format, and compare their data with known organisms.

During classroom discussions charts and graphs are analyzed in several learning modules and students' skill level evaluated on lecture exams. Examples of topics discussed are the following:

1. Use of serial dilutions in the determination of MBCs (minimum bactericidal concentration) and MICs (minimum inhibitory concentration) and their importance to doctors in prescribing antibiotic therapy.
2. Use of Gaussian distribution to study the different phases of bacterial growth in vitro and developmental stages of disease in vivo.
3. Interpretation of graphs to determine how temperature, pH, and substrate concentrations effect the rate of enzymatic reactions.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The concept of recognizing our individual roles and roles others have in our diverse world is emphasized at two different levels: cooperative learning embedded within the laboratory component and discussions embedded within the lecture component. In the laboratory, some exercises require students to work in teams and to collaborate with other teams. This teaming approach provides students opportunities to work in a more diverse environment along with emphasizing the value of collaboration. For example, Effectiveness of Disinfectants and Antiseptics exercise requires team members to work together in the selection of four antibacterial products that are different in chemical composition. Each team uses a different bacteria. Teams compare their results to determine which chemicals are more effective per bacteria type and draw conclusions. Evaluation of this essential skill is via performance on laboratory reports.

Additionally within the course curriculum, classroom discussions include topics such as vaccinations, spread of infectious diseases, breaking the chain of transmission, and importance of case reporting to prevent major epidemics/pandemics. Reinforced is the importance of collaboration between governmental agencies that monitor reportable infectious diseases at the different levels: local, national, and global. To emphasize that science is to be viewed as objective and provides knowledge about the real world, students locate and summarize a news release from a credible agency (e.g. Center for Disease Control, National Health Organization, World Health Organization) concerning a current outbreak at either the local, national, or global level. Assessment of this activity is performance-based via a rubric.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 18 2019



### Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Lab Report 10

Filename: Lab\_Report\_10.doc Size: 42.5 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000158

Janett Johnson - janett.johnson@clovis.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	HIST
Number	122
Title	World Civilization II
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	HIST
Number	1140
Name	World History II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- 1) Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries of global history from ancient times to the present.
- 2) Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.
- 3) Students will summarize and appraise different historical interpretations and evidence in order to construct past events.
- 4) Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluate credibility, perspective, and relevance.
- 5) Students will create well-supported historical arguments and narratives that demonstrate an awareness of audience.
- 6) Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.



## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will analyze and critically interpret significant primary texts and/or works of art across the semester. Emphasis will be placed in these visual and written materials upon a thematic concentration concerning ideas, characteristics, and traits related to the continued rise and eventual explosion of increasing complex, technologically advanced, and globally powerful societies and nation states in the developing modern world. These elements could include internal and external factors that influence the rise of modern civilization, including: how many past social, religious, cultural, and ethnic heritages form a basis for quickly emerging modern societies, nation states, and empires; the continued and even growing nature and importance of belief systems in forming behavior and social mores; the burgeoning influence of technology and its ever increasing tempo of modernization and change; and particularly how these systems are embedded in changing nations, governments, laws, social institutions, and world order as related to the development of global society from the year 1500 through the present. In assessment, all students will take a comprehensive and objective final exam. Every multiple-choice question on the exam will be linked to one or more of the course objectives that address the area state competencies. Questions on the final exam will be based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. All exam questions will come from weekly unit quizzes and the midterm exam taken during the semester.

Particular emphasis will be placed in lectures, written assignments and visual materials upon key elements of social, economic, and cultural institutions that drive the major themes of modernization and conflict, are common to the major developing civilizations, in conjunction with lecture/reading outlines, documentary films, YouTube clips, and weekly review sessions to create an incremental sequence of student comprehension of the course objectives and competencies. Students will analyze how man progressed from the earliest communal and cooperative constructs in antiquity to the complex and varied civilizations in existence worldwide by 1500.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Across the semester, students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives to identify the individual role of economy, society, government, religion, and culture in the history of the world's emerging nation states and societies in the modern world. Students will demonstrate a proficiency in the recognition and articulation of the diversity of human experience across the range of modern World History to develop and understanding of how the present is informed by an awareness of the social, political, religious, cultural, and intellectual structures, particularly in regards to the progression from the Renaissance period of Enlightenment and discovery through the many ever-increasingly complex civilizations and societies in existence in the modern ear. In detail, students will trace and discuss the influence the role and effects of transition from European period of Renaissance, Enlightenment, and the Scientific Revolution to a quickly developing four hundred year era of European global dominance and empire building, the explosion of the Industrial Revolution and its profound effect upon nations, technology and warfare. Students will discuss how rising technology and industry produced profound social changes worldwide, as well the 20th century reorganization of power, influence, economy, and political institution brought forth by two global world wars and the rise of global superpowers during the Cold War as nuclear technology brought the destruction on mankind within reach. Students will analyze the ramifications of a new world order where interconnection between peoples and nations is unprecedented, but age old problems of nationalism, religious separatism, extremism, ethnic and racial competition and hatred, and particularly these elements under the specter and deteriorating natural environment make the future uncertain. Particular emphasis will be placed in lectures, written assignments and visual materials will be placed upon key elements of social, economic, and cultural institutions that drive the major themes of modernization and conflict, in conjunction with lecture/reading outlines, documentary films, YouTube clips, and weekly review sessions to create an incremental sequence of student comprehension of the course objectives and competencies.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

In this course, during the semester, students will be exposed to and required to use a range of digital platforms and media sources, including PowerPoint slide presentations, historical maps, primary documents, historical documentaries, YouTube video clips, subject related websites, and a host of other digital venues to reinforce visually the contextual basis of ideas, events, and trends discussed during the course of this class. These tools will be implemented in this course through various means in the face to face classroom environment, and through the Canvas Digital Learning platform and its many digital capabilities. Students will learn the basic computer skills, technological steps, and platform skills to access a course shell within Canvas in all classes to access the above mentioned digital course materials, as well as listen to and observe specially-created recorded lectures by the instructor using Camtasia digital video technology. In Canvas, students will also utilize exam and quiz study guides.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

HIST 122-HIST 1140 Assessment

Filename: HIST\_122-HIST\_1140\_Assessment.pdf Size: 118.8 kB

Upload Rubric



Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## HIST 122-HIST 1140 Syllabus

Filename: HIST\_122-HIST\_1140\_Syllabus.pdf Size: 90.9 kB

### Application: 0000000134

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



### Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills

throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Benjamin Cline
Title	Associate Professor
Phone	5755386207
Email	Benjamin.Cline@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	COMM
Number	221
Title	Group Communication
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

No

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	COMM
Number	2140
Name	Group Communication

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

**B. Learning Outcomes**

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for COMM 2140

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Be able to identify the nature of groups and their processes.
2. Learn group decision making and problem-solving skills;
3. Identify and analyze roles played by group members;
4. Learn group presentation skills;
5. Describe communication functions in various types of small group communication;
6. Recognize how the decision-making and interactive processes work in small group communication
7. Identify, analyze and improve individual communication behaviors and skills within the small group;
8. Successfully complete written and oral exercises which demonstrate competency in small group communication principles.

## **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

The students are graded based on their ability to use the group decision making tools that they have learned to solve or otherwise creatively circumvent the problems in a table-top game scenario.

They will also be graded on their ability to analyze those decisions in a short (800-1000 word) communication analysis of the scenario.

1. In the first, “Snacks on a train,” the are to solve the problem of making their characters become a coherent group using tools that they have learned.

The students are given an artificial scenario of keeping themselves and other NPC’s (non-player characters, pretend people) safe during a simulated terrorist attack on a train. They will be evaluated based on their ability to adapt arguments to meet the specific needs of the NPC’s on the train and produce rhetorical interventions capable of fulfilling specific needs.

During the scenario itself, the students will be asked to engage in the Production of Arguments. In order to convince the other characters (students) and the NPC’s to engage safely in this scenario. They will be asked to Understand and Evaluate Messages from the NPC’s within the scenario and from each other both for truth claims and persuasive content. In character, the students will be required to consider genre and medium awareness application and versatility by requiring the characters to communicate in a myriad of ways, but focusing on texting, phones, non-verbal interaction, and face-to-face oral communication.

In the written analysis of the scenario, the students will be asked to evaluate their actions during the scenario, paying special attention to evaluating the arguments they produced and their choice of media (genre and medium awareness) to communicate those arguments.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The students are graded based on their ability to use the group decision making tools that they have learned to solve or otherwise creatively circumvent the problems.

They will also be graded on their ability to analyze those decisions in a short (800-1000 word) communication analysis of the scenario.

1. In the first scenario they are to solve the problem of making their characters become a coherent group using tools that they have learned

During the scenario itself, the students will be asked to figure out what the problem is and how it can be solved within the bounds of the scenario (Problem setting). In order to accomplish this, they will have to use the means at their characters' disposal to seek out information, or acquire evidence, to make sense of the scenario and develop hypotheses as to what, exactly, is going on. In character, the students will be required to consider evaluate that evidence by considering the quality of the source and the argument that source makes. They are then required to actually use that evidence to engage in group decision making, reasoning/conclusion within the scenario.

Finally, in the reflective paper the students are asked to look at their character's problem setting, evidence acquiring, and how they evaluated that evidence and the conclusions which were drawn.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

In the role-playing scenarios the students are given the opportunity to put sources into three categories. (Authority and Value of Information).

1. “Okay sources” are generally not the best, but given a dearth of better sources might be okay and are certainly fine for a source of fun, pithy quotes, but may not be reliable.

2 “Good sources” are checked by “the test of time,” editorial boards, etc. These include legitimate news sources and religious texts. In general these should not be dismissed out of hand but sometimes reflect a bias situational or personal.

3. Finally, we have “excellent sources” which are sources that pass peer-review. We show the students how to access library resources to get peer reviewed materials, how the peer-review process works, and why it is generally reliable.

In addition, students will be required to create three papers: one on cooperative gaming, one on competitive gaming, and one on the application of gaming to real world situations. In these papers the students will be required to cite sources and evaluate those sources based on the “okay” “good” and “excellent” rubric described above.

Furthermore, the students will be required to search out those cited sources using internet and library resources (Digital Literacy), and put it together in a coherent way (Information Structure) to reason to a unique thesis (Research as Inquiry).

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CJHkV5-rKUrpNEBVUkNjaJPSJAaorjVJhNqiW?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 22 2019



### Upload Assessment

**Completed** - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### WNMU COMM 2140 Syllabus

**Filename:** WNMU\_COMM\_2140\_Syllabus.docx **Size:** 219.3 kB



### Upload Rubric

**In Progress** - Last edited: Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### group comm Rubric

**Filename:** group\_comm\_Rubric.docx **Size:** 11.2 kB

## Application: 0000000243

Annemarie Oldfield - annemarie.oldfield@roswell.enmu.edu

NM General Education Curriculum



### Application Form

**Completed** - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Robert Moore
Title	Social Sciences Director
Phone	575-624-7482
Email	robert.moore@roswell.enmu.edu

### Submitting Institution

Name of HEI	Eastern New Mexico University-Roswell
Submitting Department	Social Sciences

### Chief Academic Officer

Name	Dr. Ken Maguire
Email	ken.maguire@roswell.enmu.edu

## Registrar

Name	Dr. Linda Neel
Email	linda.neel@roswell.enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	PSY
Number	200
Title	Human Growth and Development
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	na
Number	na
Title (if applicable)	na

## New Mexico Common Course Information

Prefix	PSYC
Number	2120
Name	Developmental Psychology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Upon completion of the course, students should be able to:

1. Explain theories, methods and research findings of lifespan developmental psychology.
2. Describe the interaction between physical, cognitive, and psychosocial development across the lifespan.
3. Compare and contrast major developmental theories and discuss what each brings to or adds to the study of lifespan developmental psychology.
4. Identify factors that influence psychological development across the lifespan.
5. Apply basic principles of developmental psychology to one's own life experiences.
6. Analyze historical and cultural factors that influence development across the lifespan.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

same as above

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will engage in a series of activities throughout the semester to meet the criteria of this skill. For the subsection of Genre and Medium Awareness, Application and Versatility, students will be a) completing weekly reading reactions where they reflect on the reading, making critical connections between their lives and the content of the chapter, b) engaging in small group work/collaborative learning groups where they discuss, write, and illustrate various theories and concepts from the weekly readings, and c) developing a research proposal to be included in the end of term final project. For the subsection of Strategies for Understanding and Evaluating Messages, students will be a) presenting collaborative learning group work where they read for main points while applying various theoretical perspectives; b) writing weekly reading reactions where they summarize, interpret, and synthesize reading materials; c) participating in weekly discussion forums where they seek key arguments and clarify counter-arguments through Socratic questioning techniques in order to analyze and apply essential concepts and theories. For the final subsection of Evaluation and Production of Arguments, students will be a) completing a multi-step, semester long, research project where students evaluate their own arguments in connection to the arguments of others. This project includes a written report and an oral and digital presentation of results. Assessment of the communication essential skill will include informal feedback in class, as well as the use of rubrics to assess written and oral assignments.



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students engage in problem setting as they discuss various aspects of human development, and as they use psychological concepts to better articulate the biological, environmental, genetic, psychological, and social factors impacting development. As students gather information from various sources about behavior, they are developing and demonstrating evidence acquisition skills. Evaluating the obtained information for credibility, accuracy, and relevance encourages students to develop evidence-based evaluation skills. Finally, as students draw conclusions about the many factors impacting human development, and consider ways to minimize developmental obstacles, they are developing valuable reasoning skills. Assessment of these critical thinking skills includes informal feedback, in class and via the LMS tools, as students engage in collaborative class assignments, as well as students' written assignments and projects. Collaborative class assignments will include comparing/contrasting research methods used by developmental psychologists, debating the nature/nurture issue, and/or critiquing theories of social and personality development. A research project, which includes an oral and digital presentation, will be assigned to help students develop research skills and help them differentiate fact from opinion. Grading rubrics will be used to formally assess written assignments, presentations and research project.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will engage in class discussions, small group discussions, debates, group projects, and/or group presentations to aid in the development of collaboration and teamwork skills. Group Discussion Norms will be developed by the instructor and students to encourage (a) participation by all students, (b) to encourage students to be culturally sensitive in their remarks, and (c) to encourage students to consider other viewpoints. The instructor provides feedback informally in class as discussions and collaborative sharing takes place. Group work is formally assessed by the instructor. Additionally, students learn to leverage academic and social-emotional strengths in group collaborative work, where they evaluate and reflect on their contributions to the group. Finally, students engage in peer assessment.

Students will address the subsection of Civic Discourse, Civic Knowledge and Engagement (Local and Global) by participating in discussion forums where they engage in respectful civil dialogue (guided by the Group Discussion Norms) applying the various theoretical and personal perspectives' viewpoints of real-world situations. This enables them to navigate the potential pitfalls usually connected to contentious issues surrounding human development and psychology. Further, this allows them to identify and address the local and global viewpoints of the real-world situations. Additionally, students will complete written assignments where they will summarize, interpret, and synthesize reading materials and weekly discussion content while recognizing the value of the varied responses from within the class. Assessment of this skill will include informal feedback within the class, as well as formal assessment via rubrics and feedback via the LMS.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan  
under construction

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 22 2019



### Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## PSY 200 Assessment

Filename: PSY\_200\_Assessment.docx Size: 19.7 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000015

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



### Application Form

Completed - Mar 5 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins
Title	Division Chair
Phone	575-769-4909
Email	don.scroggins@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Math

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	MATH
Number	110
Title	College Algebra
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	MATH
Number	1220
Name	College Algebra

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Students will build on their knowledge of polynomial, rational, absolute value, radical, exponential and logarithm functions in the following contexts:

1. Use function notation; perform function arithmetic, including composition; find inverse functions.
2. Identify functions and their transformations given in algebraic, graphical, numerical, and verbal representations, and explain the connections between these representations.
3. Graph and interpret key feature of functions, e.g., intercepts, leading term, end behavior, asymptotes.
4. Solve equations algebraically to answer questions about graphs, and use graphs to estimate solutions to equations.
5. Solve contextual problems by identifying the appropriate type of function given the context and creating a formula based on the information given.
6. Communicate mathematical information using proper notation and verbal explanations.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Throughout the semester of this course, students communicate via multiple genres and media. One of the most prominent examples of this is students organizing numerical and functional information graphically. Students use the characteristics of set relations (specifically functions) to sketch graphs that communicate mathematical information in a manner easily understood by both the numerically gifted and mathematically challenged alike. Furthermore, students acquire the ability to determine key characteristics of the graphs themselves in order to understand and communicate the real-world implications. An example of this is using the graph of a quadratic function to communicate the maximum profit a company can earn by identifying the vertex of the parabola. Students are also well versed in communicating the results of a real-world application problem in the correct, effective way. For example, students are expected to communicate their results of a geometric problem with the proper units attached, creating a habit of proper communication in a real-world setting, like a job.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

One of the greatest benefits of taking College Algebra is the intensive focus on word problems as a means of critical thinking. Across the semester, students learn the most efficient method of gathering information from a real-world application, organizing the information in a fashion that benefits quantitative calculation (i.e. converting verbal descriptions into mathematical equations), and using mathematical concepts previously taught to solve the problem. Students are then able to determine the validity of the numerical answers as they apply to the problem. Students will harness these skills to solve problems relating to projectile motion, geometric structures, revenue and profit, rate of work, exponential growth/decay, mixture combinations, and investment opportunities.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

In terms of analyzing quantitative arguments, a very large portion of learning time in College Algebra is spent over the entirety of the semester using arithmetic to solve for unknown quantities. Students become well versed in many types of equations, such as quadratic, higher-order polynomial, absolute value, quadratic-in-type, exponential, and logarithmic. With regard to communication, students learn to be accurate and efficient in using the mathematical structure of an equation to sketch its graph. Specifically, students learn to transform the graphs of parent functions in order to sketch a new equation. Further, students use the Rational Root Theorem Des Cartes Rule of Signs to determine the zeros of higher-order polynomials to sketch the graph. Lastly, students use the quantitative methods learned to solve equations and apply them to systems of linear equations. Students then apply all of these quantitative reasoning skills to solving real-world application problems such as projectile motion, geometric structures, revenue and profit, rate of work, exponential growth/decay, mixture combinations, and investment opportunities.



#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 5 2019



#### Upload Assessment

Completed - Mar 5 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### MATH 110 Sample Final Exam

Filename: MATH\_110\_Sample\_Final\_Exam.pdf Size: 666.6 kB



#### Upload Rubric

Completed - Mar 5 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### MATH 110 to be MATH 1220 College Algebra Syllabus-1

Filename: MATH\_110\_to\_be\_MATH\_1220\_College\_Alge\_A2YdP2m.docx Size: 33.2 kB

### Application: 0000000037

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



#### Application Form

Completed - Mar 13 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	PHYS
Number	1320
Title	Calculus-Based Physics II
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	PHYS
Number	1320L
Title (if applicable)	Calculus-Based Physics II Lab

### New Mexico Common Course Information

Prefix	PHYS
Number	1320
Name	Calculus-Based Physics II Lab

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply the concepts of electric charge, electric field and electric potential to solve problems.
2. Sketch the electric field in the vicinity of point, line, sheet, and spherical distributions of static electric charge.
3. Sketch the magnetic field in the vicinity of line, ring, sheet, and solenoid distributions of steady current.
4. Describe the relationship between electric field and electric potential.
- 5 .Calculate the Lorentz force on a moving charge for simple geometries of the fields and use it to analyze the motion of charged particles.
6. Apply the integral forms of Maxwell's equations.
- 7 .Calculate the energy of electromagnetic fields.
8. Analyze DC circuits.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem setting: In some labs, students have a task to state and test a hypothesis in a physical situation such as a DC circuit or a transformer. They state a hypothesis to set the problem they will solve (Appendix A, B).

Evidence acquisition: In most labs, students acquire evidence experimentally, as by measuring electric resistance, voltage, and current (Appendix A) or the voltage across a transformer (Appendix B).

Evidence evaluation: Students evaluate their lab results for accuracy and discuss possible sources of error (Appendix A, B). In some homework problems, students determine what information is irrelevant (Appendix C).

Reasoning/Conclusion: Students state conclusions based on their lab results (Appendix A, B). In homework and test problems, students determine what solution method to use (Appendix D). Also, in some homework problems, students answer conceptual questions, showing the reasoning that led them to their understanding of the physical situation in question.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information, Application of Quantitative Models: On homework and tests, students read questions and communicate answers using mathematical notation including units. They work the problems by applying quantitative models presented there and in class (Appendix D). These are the main assessments of the lecture course. They do the same with problems that arise in the labs (Appendix A, B). Also, on labs, students describe their procedures and express their results and conclusions (Appendix A, B).

Analysis of Quantitative Arguments: Students are given quantitative physics arguments and analyze them to determine whether they're correct or incorrect, and if incorrect, what the mistake(s) is or are (Appendix E).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students answer homework questions on global issues of sustainability and the natural world related to physics, such as the greenhouse effect (Appendix F).

Collaboration skills, teamwork and value systems: In every lab, students work together, and in some, they reflect on their collaboration, addressing specific questions about division of labor and conflict resolution and how they could improve their collaboration (Appendix G).

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 10 2019



**Upload Assessment**

**Completed** - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**PHYS 1320 assignments**

**Filename:** PHYS\_1320\_assignments.pdf **Size:** 609.9 kB



**Upload Rubric**

**Completed** - Mar 10 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**PHYS 1320 rubric**

**Filename:** PHYS\_1320\_rubric.docx **Size:** 13.2 kB

**Application: 0000000043**

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



**Application Form**

**Completed** - Mar 12 2019

**Application Form**

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and



assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Kennedy Alila
Title	Professor of Chemistry
Phone	5754922803
Email	kalila@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	CH
Number	124A
Title	General Chemistry II/Lab
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	CHEM
Number	1225C
Name	General Chemistry II Lecture and Laboratory for STEM Majors

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Listed below are a set of student learning outcomes tied to the course lecture and laboratory for CHEM 1225C, as a combined credit course. They help assess the student's understanding of the learning processes and the necessary course-skill acquisition during the learning process.

#### Lecture: Student Learning Outcomes

1. Explain the intermolecular attractive forces that determine physical properties and phase transitions, and apply this knowledge to qualitatively evaluate these forces from structure and to predict the physical properties that result.
2. Calculate solution concentrations in various units, explain the effects of temperature, pressure and structure on solubility, and describe the colligative properties of solutions, and determine solution concentrations using colligative property values and vice versa.
3. Explain rates of reaction, rate laws, and half life, determine the rate, rate law and rate constant of a reaction and calculate concentration as a function of time and vice versa, as well as explain the collision model of

reaction

dynamics and derive a rate law from a reaction mechanism, evaluating the consistency of a mechanism of a given rate law.

4. Describe the dynamic nature of chemical equilibrium and its relation to reaction rates, and apply LeChatelier's

Principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures as well as describe the equilibrium constant and use it to determine whether equilibrium has been established, and calculate equilibrium constants from equilibrium concentrations and vice versa.

5. Describe the different models of acids and base behavior and the molecular basis for acid strength, as well as apply equilibrium principles to aqueous solutions, including acid base and solubility reactions, and calculate pH and species concentrations in buffered and unbuffered solutions.

6. Explain titration curves and speciation diagrams, as well as calculate concentrations of reactants from the former

and determine dominant species as a function of pH from the latter.

7. Explain and calculate the thermodynamic functions, enthalpy, entropy and Gibbs free energy, for a chemical

system, and relate these functions to equilibrium constants and reaction spontaneity; balance redox equations,

express them as two half reactions and evaluate the potential, free energy and equilibrium K for the reaction, as well as predict the spontaneous direction.

8. Construct a model of a galvanic or electrolytic cell; or describe organic reactions.

9. Describe bonding theories, such as valence and molecular orbital theory.

#### Laboratory: Student Learning Outcomes

1. Demonstrate and apply concepts associated with laboratory safety, including the possible consequences of not

adhering to appropriate safety guidelines.

2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value with the correct units, solving

problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.

3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate

measurement instrumentation (both analog and digital).

4. Prepare solutions with an acceptable accuracy to a known concentration using appropriate glassware.

5. Perform basic laboratory operations related to, but not limited to, gas behavior, colligative properties of solutions, calorimetry, chemical kinetics, chemical equilibria, acid/base titrations, electrochemistry, metal reactivity, and qualitative analyses of ions.
6. Draw conclusions based on data and analyses from laboratory experiments.
7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes, as required.
8. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
9. Design experimental procedures to study chemical phenomena

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

A challenging course requires that a student develops a scientific strategy so as to meet the intellectual expectation of the learning process. Students in this course, having taken CHEM 1215C as a prerequisite, will be expected to know that critical thinking is key to unraveling a scientific phenomena. It is highly expected they will be able to identify and characterize a scientific problem, state the problem, then describe the phenomena in a theoretical principle or be able to pursue an experimental approach. They will be asked to formulate or design scientific projects that are based on theoretical and/or experimental scientific problems of interest; students will generate a solution maps that reinforce a very strong position of a scientific argument.

Students will be actively and practically engaged in performing laboratory experiments related to lectures or provide a critical look at theories and evidence on issues of interest. The concepts will revolve round complex scientific

problems from a single or a wide range of topics/chapters. Knowledge and application of theoretical principles,

alongside hands-on chemical instrumentation will be highly emphasized. They will be required to make observations and gather any qualitative or quantitative data bearing in mind the importance and practice of laboratory safety.

Students will then be required analyze and evaluate their own data for falsifiability or verifiability which may include

personal awareness of the process and assumptions they may make. They will also be required to support the

credibility of their data or justify errors or assumptions made in the process.

Students will then reflect on relevant outcomes and develop relevant conclusions based on their data.

Any

discrepancies will need justifications by negative or positive reasoning.

Assessment of outcomes in this course will be through the course textbook online homework and in-class proctored tests. Students will be asked to describe, outline a procedure, analyze/interpret, demonstrate, apply, determine, draw, manipulate, or show conceptual relevance through written tests. The laboratory assessment will be through actual experimental design and performance. They will investigate, observe record, interpret, or, analyze their findings. Tests may/will also be reflective, based on a previous lab activity in relation to a lecture to evaluate their translation of a scientific critical thinking concept in written narrative form.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning in CHEM 1225C for STEM majors will require that students display good communication in representing or applying a quantitative argument from Lecture and/or Laboratory component. Students in this course will be expected to be able to collect relevant quantitative scientific information, using appropriate methods and offer the best possible numerical data solving approach. Quantitative data that students are required to study or generate will be based on built knowledge of student on colligative, chemical kinetics, thermodynamic, chemical equilibrium, or electrochemical material concepts. Students are required to scrutinize, construct models where applicable, communicate, or express substantive quantitative information in written or oral format through tests, laboratory reports, or some form of presentation. Students will generate and represent data they have gathered in the most appropriate forms like tables, charts, or graphs and relate to their quantitative relationships. Students will be required to show proficiencies in translations and integration of quantitative outcomes on their homework, written test materials, or laboratory reports.

Students will also be required to be able to consider quantitative arguments from other sources. They should be able to critique, differentiate, and identify emerging skills presented by other sources, and compare with their own if any before drawing conclusions. Use of appropriate techniques of skill developments of mathematical proof or statistical analysis is highly emphasized. In some cases where applicable, they apply relevant quantitative models to real-world issues. This will require classification or description of quantitative information where applicable.

Assessments of the learning process will focus on the application of quantitative understanding using mathematical manipulation skills. Quantitative calculations will employ effective dimensional analysis approach; deep understanding of different chemical systems and functions will be emphasized. Laboratory component will keenly focus on safety, demonstration of computational observation and mathematical skills. Students will be required to be able to prepare accurate concentration of solutions they may need. Instrumentation skills will be highlighted as key to generating certain quantitative information in the lab.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

As STEM majors there is a higher expectations that students make connection and describe personal and social-ethical choices or actions in their decision making process, either as an individual or when working collaboratively. They will develop strategies that help them evaluate issues by comparing and contrasting solutions across social and cultural relationships in their reports or presentations.

They will then illustrate the impact of their decision making in a sustainable way through ethical reasoning. During

concept reviews and laboratory activities, students will be required to give personal input while working collaboratively on issue through shared obligations They will present a diverse view on issues, demonstrate ability in civic dialogue on issues local or global.

Students will be expected to make connections between various scientific facts with their personal or social world.

Students may be asked to form peer groups and discuss how being exposed to certain environmental factors can

manipulate human chemical equilibrium systems, or how an ocean acidification would be an equilibrium under stress with lots of risks; This, they are expected to know the reasons for having carbon monoxide sensors in homes for example. Students in Laboratory work groups will be expected to take team-lead functions in running their own lab projects. Their tests, homework, or debate problems will estimate and discuss the socio-economic impact of air

pollution through unregulated release of certain pollutants from use of hydrocarbon fuels. Many other areas of

similar connections to relevant outcomes will be considered.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)



**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



**Upload Assessment**

**Completed** - Mar 12 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**CHEM 1225C Sample Tests Problems**

**Filename:** CHEM\_1225C\_Sample\_Tests\_Problems.docx **Size:** 13.0 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000074**

Don Scroggins - don.scroggins@clovis.edu  
NM General Education Curriculum



**Application Form**

**Completed** - Mar 15 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Michelle Hughes
Title	Full Time Instructor
Phone	5757694919
Email	michelle.hughes@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	BIOL
Number	222
Title	Microbiology Lecture and Lab
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	n/a
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	BIOL
Number	2310C
Name	Microbiology Lecture and Laboratory

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

### Student Learning Outcomes: (lecture)

1. Describe and compare the structure and function of prokaryotic and eukaryotic cells.
2. Describe and compare the techniques used for staining of and microscopic observation of bacteria including morphology.
3. Describe the nutritional requirements for bacterial growth and the impact of environmental factors on bacterial growth (temperature, pH, oxygen, etc.).
4. Describe and compare the mechanisms of aerobic respiration, anaerobic respiration, and fermentative metabolism.
5. Describe the mechanism of bacterial growth by binary fission, and laboratory methods used for observing and measuring bacterial growth.
6. Describe the mechanisms of bacterial DNA replication, RNA transcription, and translation, and compare and contrast with eukaryotic cells.
7. Describe the structure and replication strategies of viruses.
8. Describe and contrast mechanisms of innate nonspecific immunity and adaptive specific immunity.
9. Describe immune hypersensitivity reactions, autoimmune diseases, and immunodeficiency diseases.
10. Differentiate between host-microbe relationships, mechanisms of microbial pathogenesis, differentiate between communicable and non-communicable diseases and describe mechanisms of direct and indirect transmission of communicable diseases

### Student Learning Outcomes: (laboratory)

1. Demonstrate skills of microscopy.
2. Demonstrate skills of bacterial staining.
3. Demonstrate aseptic technique for inoculation of bacterial growth media.
4. Interpret results from selective and differential media.
5. Demonstrate appropriate use of diagnostic reagents.
6. Interpret results of diagnostic assays.
7. Identify unknown bacterial species through the use of a dichotomous key, inoculation and interpretation of laboratory assays, and application of the scientific method.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem setting will be addressed throughout the semester by students learning the scientific method as it applies to microbiology. Students will be assessed by their lab results completed before, during, and after experimentation. Evidence acquisition will take place in a laboratory setting as students support concepts of microbiology by examining critically unknowns in bacteriology. Critical thinking skills will be assessed through both critical thinking multiple choice questions and laboratory conclusion questions and results. Students will also give an oral presentation at the end of the semester over their lab results and research completed to determine their unknown strain of bacteria. Critical thinking skills will be developed throughout the semester by the implementation of Questions of the Day to ensure students are regularly going over their lecture material in preparation to answer a random question at the start of class over a concept they have previously learned. Reasoning skills will be developed through interpretation of lab results and ability to apply scientific knowledge to unknown microbiological situations. Reasoning and conclusion will be assessed through lab assignments and formal course exams.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will develop quantitative reasoning skills across the semester through a series of course discussions of case studies, an essay paper, laboratory exercises and an oral presentation.

Communication and representation of data takes place through the semester as students collect and present data in tabular and graphic form during lab experiments as they create and maintain a lab book. Students will also present this data at the end of the semester in the form of an oral presentation.

Communication and representation of data will also be shown by the essay paper each student will write over a particular parasite. Students will be assessed on the presentation of data in their lab books, their oral presentations, formal course exams as well as their answered case studies. Students will also be assessed on the presentation of data by completing an essay paper in APA format, over a chosen parasite. Students will be assessed on their ability to analyze quantitative information by answering questions based on a sample data set or data they collected as part of their lab exercises as well as putting all of this information together at the end of the semester to present their findings in an oral presentation. Application of quantitative models will take place in a laboratory setting and assessed during laboratory practical exams and formal written exam, maintaining their lab books, along with an oral presentation.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Throughout the entire semester, students will examine microorganisms in the context of microbiology, and the impacts these microbes have on human health worldwide. Students will learn about and discuss microorganisms including bacteria, viruses, protozoa and fungi where they are prevalent, how they cause disease, and how they can be treated. Students will then examine how the human body is able to overcome these microorganisms or succumb to the disease many of these microbes cause. Students will learn about many different parasites while examining their life cycles, pathophysiology and epidemiology, along with signs and symptoms and treatments given to the host. Students will learn ethical reasoning skills during class concerning human health and applicable current research including proper food handling strategies as well as aseptic techniques including disinfection and sterilization. Students will complete various labs in which they are able to use their own body secretions to kill off bacteria, as well as complete labs to see what types of microorganisms live in and on them. Students will compare these results with the rest of the class and work together to identify what microorganisms were extracted. Collaboration skills, teamwork, and value systems are developed throughout the course as students are required to work with one another to learn about the various aspects of microbiology and disease and use their combined skills towards civic engagement. Assessments will occur via formal written exams and discussion forums.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 15 2019





## Upload Assessment

Completed - Mar 15 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### BIOL 222 Assessment samples

Filename: BIOL\_222\_Assessment\_samples.zip Size: 768.4 kB



## Upload Rubric

Completed - Mar 18 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Spring 2019 222- 101- F-F Syllabus M-W 600 - 830 pm

Filename: Spring\_2019\_222-\_101-\_F-F\_Syllabus\_M-\_are9fgD.docx Size: 56.2 kB

## Application: 0000000113

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Mary Therese Ellingwood
Title	Full Time Faculty and Course Coordinator
Phone	505-224-5642
Email	mpadberg@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	MSE

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	MATH
Number	1130
Title	Survey of Mathematics
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	MATH
Number	1130
Name	Survey of Mathematics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Construct and analyze graphs and/or data sets.
  - a. Gather and organize information.
  - b. Understand the purpose and use of various graphical representations such as tables, line graphs, tilings, networks, bar graphs, etc.
  - c. Interpret results through graphs, lists, tables, sequences, etc.
  - d. Draw conclusions from data or various graphical representations.
2. Use and solve various kinds of equations.
  - a. Understand the purpose of and use appropriate formulas within a mathematical application.
  - b. Solve equations within a mathematical application.
  - c. Check answers to problems and determine the reasonableness of results.
3. Understand and write mathematical explanations using appropriate definitions and symbols.
  - a. Translate mathematical information into symbolic form.
  - b. Define mathematical concepts in the student's own words.
  - c. Use basic mathematical skills to solve problems.
4. Demonstrate problem solving skills within the context of mathematical applications.
  - a. Show an understanding of a mathematical application both orally and in writing.
  - b. Choose an effective strategy to solve a problem.
  - c. Gather and organize relevant information for a given application.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will communicate an awareness of a variety of mathematical genres and mediums through written explanations and open dialogues about personal and historical mathematical discoveries and understandings. Each new chapter covered in this survey class will incorporate two major discussions: one at the introduction of the chapter and one at the end. These discussions will take place through online discussion boards for online classes and either written or orally presented in face-to-face classes. Students will be assessed as they apply and communicate appropriate mathematical language and syntax. They will read and interpret different types of graphs to develop strategies of understanding and evaluating mathematics messages, learning new equations and identifying key components within a problem to determine the use of an appropriate formula, and the importance of variable choice and symbolic notation as an effective communication tool.

Students will combine English sentence structure and mathematical arguments in a cohesive way to support their conclusions.

When a new topic is introduced, students will evaluate articles in their field of interest, academic major, or academic program to discover how each math concept can be applied in a practical way in their own lives and share their discoveries with the class in an open discussion board. Students will not only present their findings but evaluate ideas posted by classmates as well as present their own arguments about the concepts students have found (see attached assessment).

Once a topic has been concluded, students will identify a homework question from the section(s) with which they struggled and how they were able to persevere and find a solution. Their explanation will be assessed for proper math notation and in line-by-line format if appropriate (see attached rubric).

Students may also include any digital or traditional format resources they utilized in order to help them understand the problem and reach a solution. The focus will be on communicating both their strategies for understanding as well as evaluating their solutions to classmates so they, too, may have a deeper

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

In this class, students use critical thinking on all problems and sections, as is the nature of mathematics. Since instructors have flexibility in the topics chosen, the critical thinking performed depends on this choice. However, collectively each section contains problems done both inside and outside of class that necessitate the major steps of critical thinking: understanding the problem, determining a method of approach and modifying said method as new details or barriers arise, and finally stating a conclusion that is supported through this chosen method.

Two common topics that are mandatory across sections are statistics and financial math.

In the financial math, students problem set as they work with interest rates and many different ways to compute the total balance due after a certificate of deposit (CD) is taken out either using simple interest, compound interest, or continuously compounded interest. Students will acquire evidence to ensure they understand the advantages and disadvantages of the different types of interest calculations and how the interest rate and type of interest affect a final balance amount, a comparison is done. Students evaluate the evidence of two scenarios when investing in a CD. One scenario is from the bank offering a particular interest rate compounded monthly, and the other is from a credit union offering a lower interest rate but compounded continuously. Students must reason to determine the appropriate formula and conclude the appropriate variable values in their correct form in order to determine the total amount received after investment in each case. Students will be assessed as they determine which is the better investment and support this conclusion with well-defined reasoning.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will add to their existing understanding of the quantitative representation of mathematical symbols and syntax by using appropriate symbols of logic, statistics and financial math; create and analyze graphs used in set theory and/or statistics; create and analyze logic tables and/or amortization tables; interpret between different numerations systems and our Arabic numeration system and/or identifying Euler and Hamilton circuits using graph theory.

In the statistics portion of the class, students' quantitative reasoning will be assessed when they complete multi-step exercises that engage them in a real-world data set. They will analyze quantitative arguments when they compare and contrast theoretical results and raw data results (e.g. the expectation of the number of times a die roll will result in 4 if rolled 10 times versus the actual number of times a die roll results in 4 when rolled 10 times). Using raw data in the form of a frequency distribution graph, students will apply this quantitative model to compute important statistical values (mean, median, mode, standard deviation). Students will argue if the data represents a normal distribution, and in the event it does they will compute additional values (such as a z-score) and interpret their results within context of the real-world problem. They will brainstorm ways the quantitative models used in statistics can be used in their own field of study or applied as a general life skill.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Math 1130 Assessment

Filename: Math\_1130\_Assessment.docx Size: 21.5 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## MATH 1130 Rubric

Filename: MATH\_1130\_Rubric.docx Size: 20.9 kB

## Application: 0000000123

A. BAILEY Pagels - pagelsa@wnmu.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Scott Fritz
Title	Associate Professor of History
Phone	575-538-6823
Email	Scott.Fritz@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	HIST
Number	1110
Title	United States History I
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	HIST
Number	1110
Name	United States History I

**A. Content Area and Essential Skills**

## **To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## **B. Learning Outcomes**

### **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for Humanities and HIST 1110 United States History I

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

- 1) Identify, describe and explain human behavior and how it is influenced by social and political structures, geography, economics, culture, history and social institutions.
- 2) Characterize processes within the context of complex and diverse communities through the study of significant primary texts, quantitative data, works of art, and literature across a range of historical periods and geographical areas.
- 3) Articulate how beliefs, assumptions, and values are influenced by factors such as political, economic, social, cultural, religious, and intellectual structures.
- 4) Apply this knowledge base of the social and behavioral sciences to identify, describe, explain, and critically evaluate relevant issues such as sustainability, ethical dilemmas, and other contemporary arguments as they apply to the world we live in today.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The class will address New Mexico's general education essential skill of "Critical Thinking" by requiring students to address -- in essays -- the following Component Skills: Problem Setting, Evidence Acquisition, Evidence Evaluation, and Reasoning/Conclusion. Students will be required to perfect the component skill of "Problem Setting" by creating a research proposal where they ask questions about their topics (i.e. What do I not know about a topic?), and create a hypothesis (i.e. I anticipate that the following paper will argue successfully that women suffered from gender inequality [during a given historical period.] The component skills of "Evidence Acquisition" and "Evidence Evaluation" will be accessed by having students develop an annotated bibliography where they will have to ask the questions: Are these sources peer-reviewed? Can I trust the sources that I chose? Once students begin writing their essays, the professor will ask the students if they have been able to prove that their hypothesis was correct and whether that educated guess had changed. Once students determine that their hypothesis (or revised hypothesis) can be proven with historical fact, the professor will assist them in developing their thesis. In this way, the component skill of "Reasoning/Conclusion" will be developed. This class will also align essential skill of "Critical Thinking" with NMHED's Student Learning Outcomes for the Humanities and WNMU's Department of Social Sciences and Cultural Studies Shared Learning Outcomes. It will do this by having students ask questions like: 1) How did Americans shape their own, unique historical moments and how was society shaped by those moments from 1607-1776? 2) How has culture changed in British North America from 1701-1776? 3) How does history explain the ways human behavior was influenced by society, politics, geography, economics, and/or culture from 1607-1776? A sample essay guideline and syllabus (including a rubric) accompanies this certification form that will show how the course emphasizes critical thinking skills, acquiring and assessing information, asking research questions, developing hypotheses, and reaching conclusion.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The class will address New Mexico's general education essential skill of "Personal and Social Responsibility" by requiring students to address – in essays -- the following Component Skills: 1) Intercultural reasoning and intercultural competence; 2) Sustainability and the natural and human worlds; and 3) Ethical reasoning. Each of these component skills will be assessed by asking students to answer questions based on comparing cultures, assessing environmental history, and analyzing the ethics of decisions made by political leaders. Such questions would include 1) Compare and contrast the historical experiences of Anglos and Africans during Stono's Rebellion of 1739. 2) What was the environmental impact of tobacco production in Virginia from 1610-1763? 3) Assess the ethical issues regarding the Salem Witchcraft Trials of 1692-1693. Students will have the opportunity to answer other specific essay questions, particularly those that focus on NMHED's Student Learning Outcomes for the Humanities and WNMU's Department of Social Sciences and Cultural Studies Shared Learning Outcomes. A sample essay guideline and syllabus (including a rubric) accompanies this certification form that will show how the course will stress intercultural reasoning and competence, sustainability of the natural and human worlds, and provide students opportunities to contemplate ethical issues.



**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

The class will address New Mexico's general education essential skill of "Information and Digital Literacy" by requiring students address -- in essays -- the following Component Skills: Authority and Value of Information, Information Structure, and Research as Inquiry. All three of these Component Skills will be met by using following pedagogy: First, students will access the essay guideline by linking the course's webpage. After that, they will be required to create a research proposal where they ask questions about their topics, create a hypothesis, and turn in an annotated bibliography where they judge the sources they will use. This will allow them to develop their research skills by finding sources in library holdings and digital databases, analyzing those sources critically for accuracy, and presenting their research through well-structured essays. Both primary and secondary sources will be taught, and an appreciation for original documentation and historiography will be promoted. While students will be required to verify a source's accuracy, they will also be encouraged to find ways to analyze bias within sources by, for example, telling the reader about the bias and how, by understanding that bias, the source can still be useful for understanding U.S. History. Furthermore, students will practice the structuring of information through writing classically-formatted essays that include an introduction, body, and conclusion, a thesis statement, and historical evidence, like names, places, events, and dates, that can prove and illustrate their theses. That is, they will find effective ways of presenting information that is logical, aesthetically pleasing, and comprehensible in their essays. The formatting method of Chicago Style/Turabian will be taught, showing students how historians cite differently than researchers in other academic disciplines. In this way, the class will fulfill NMHED's Student Learning Outcomes, such as "Students will distinguish between primary and secondary sources, identify and evaluate evidence..." A sample essay guideline and syllabus (including a rubric) accompanies this certification form that shows how this course will have an emphasis on accessing information, judging facts, developing interpretations, and presenting one's ideas effectively.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CJHkV5-rKUrpNEBVukNjaJPSJAaorjVJhNqiW?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



**Upload Assessment**

**Completed** - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**h1110 Guide Essay 1**

**Filename:** h1110\_Guide\_Essay\_1.doc **Size:** 46.1 kB



**Upload Rubric**

**Completed** - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**WNMU HIST 1110\_Grading Rubric**

**Filename:** WNMU\_HIST\_1110\_Grading\_Rubric.docx **Size:** 130.8 kB

**Application: 0000000107**

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 19 2019

**Application Form**

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Dean of Instruction

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	ENG
Number	160
Title	Native American Literature
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2733
Name	Native American Literature

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Other - Choose 3 essential skills below

#### Choose 3 Skills

#### Responses Selected:

Communication

Critical Thinking

Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Participate in a constructive conversation and community about Native American Literature. 2. Read and critically engage with a variety of media forms, predominately written texts. 3. Compose media reviews and book reviews in the context of Native American Literature formats and genre. 4. Seek proof of tutoring and feedback from peers about their work. 5. Revise writing based on peer feedback and critique. 6. Reflection on students' own writing and writing process is essential to understanding how Native American Literature affects students' world view. 7. Evaluate and engage with the community about what has been revealed in the classroom through reading and sharing Native American Literature.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students participate in question and answer sessions during class, thereby practicing the skills of active participation and open discussion. Students learn how different written genres affect their daily lives within their communities. Students read a wide variety of creative texts during the course, and are asked to write craft essays based on the format and text from the IAIA workshop model created in Santa Fe, NM. The Tribal College Journal Media Reviews are also used in the course. Students practice strategies for understanding and evaluating Native American Literature texts and they learn how to express their ideas and opinions verbally and in writing through assignments, class discussions, and question and answer sessions with the professor. Through craft essays, students write in an academic format (e.g. Eighth Edition MLA, and gain skills and confidence to communicate in diverse environments. Each student was asked to submit their own writing to the TCJ and over the years, some have been published in the journal as well as online.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

This course focuses on students' abilities to comprehend the written word of Native American/American Indian/Indigenous/Dineh free thought and spiritual expression. Through a Native American lens, students are encouraged to write deeply about how Native American authors create stories which affect their readers' emotions. By writing objectively, each student is exploring past experiences which are relative to their own. The NAL textbooks deal with the treatment of Native Americans by the United States federal government. The text books are selected to accentuate current issues and Native American authors from across the America are selected. Adaptation of book to film is also explored. Critical Thinking is the ability to question everything and the ability to think for oneself. This course was created so that students would have a path to clear their minds and begin to question why their thoughts, ideas, opinions and dreams matter.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

NA

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

This course is designed to give students a writing experience and an exposure to the literature of and/or about other Native Nations in America. This course provides hidden and lost historical experiences which lead each student to his or her understanding of local and global cultural. Creative writing as a means of expression is also incorporated into the course. The combination of academic and creative writing produces a balance with Intercultural reasoning and intercultural competence. Students were required to submit their creative writing to the 2019 Tribal College Journal Writing Contest. Through collaboration within the classroom, their work was submitted on time. Many of the students commented that they had never written a poem, fiction or nonfiction story, but have now gained that valuable experience of civic knowledge and engagement. Students will participate in a co-curricular project by reading a textbook created by a Dineh author to a member of their indigenous community and writing a reflection essay on the experience

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

NA

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**



## Date

Mar 19 2019



### Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## ENG160

Filename: ENG160.sample-assessment.docx Size: 20.4 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000139

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Sandy Thompson
Title	Professor of Biology
Phone	575-492-2805
Email	sthompson@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	BI
Number	134
Title	Biology I for Science Majors
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	BI
Number	134L
Title (if applicable)	Biology I for Science Majors Lab

## New Mexico Common Course Information

Prefix	BIOL
Number	2120C
Name	Cellular & Molecular Biology Lecture & Laboratory

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

**Lecture Student Learning Outcomes**

Upon successful completion of the course, the student will be able to analyze with specific detail the

1. Structure and function in prokaryotic and eukaryotic cells.
2. Major macromolecules basic structure and uses.
3. Membrane structure and function and its roles in intra and inter cellular communication and cellular function.
4. Nature of bioenergetic transformations and metabolism within the cell.
5. Cellular respiration and photosynthesis.
6. Mechanism and regulation of cellular division.
7. DNA replication.
8. Relationship between genetic information and protein structure.
9. To interpret scientific data, formulate a scientific hypothesis, and propose an experiment to test a scientific hypothesis

**Laboratory Student Learning Outcomes**

1. Understand the scientific method and how to use it to make hypotheses about cell processes.
2. Communicate scientific information and apply quantitative analysis of the scientific problems.
3. Apply scientific thinking to real world problems and be able to communicate those concepts through oral presentations.
4. Learn cell biology techniques that are widely used in modern research laboratories.
5. Be able to use different microscopes correctly and safely.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Students will perform various experiments using the scientific method on various topics including the scientific method itself, basic chemistry, cellular biology, metabolism, and genetics in order to address problem setting. Students will be assessed by setting up and designing a completely unique experiment and using individual quizzes. Students will be required to formulate their own hypothesis and completely design an experiment ensuring that ethical standards are met and experimental guidelines are followed. Students will be required to ensure that their hypothesis is falsifiable and testable so that it could be performed if resources were available. Evidence acquisition and evidence evaluation will both be assessed in the form of a literature review that the students will write using peer reviewed journals on a topic that is pre-approved by the instructor.

Students will differentiate between useful experiments and those that do not meet the standards of science by analyzing different hypotheses, methods, and experiments. Students will also be required to critique scientific articles every month in order to interpret the data, determine if the conclusions are valid, and offer suggestions for future research. Reasoning/conclusion will be assessed through weekly lab assignments as the students perform weekly labs and discuss and defend their conclusions. Students will evaluate hypotheses in order to determine if they could be addressed using the scientific method or if they are outside the scope of science. Lecture exams will assess critical thinking skills by giving the students examples and scenarios that they will be required to answer using the scientific method and basic knowledge of biology. Students will research a genetic disorder in order to have active discussions with each other and present their findings to the class.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will conduct research and select a topic based on current research in the medical field to complete a literature review on and then submit it for approval. The communication/representation of quantitative information will be assessed in the form of presentations of their literature reviews. Students will discuss their findings and explain what they have found and how they interpret the research. They will then defend their conclusions and their representation of quantitative information. Students will also analyze the cell cycle in order to verify that most cells spend most of their time in interphase during mitosis relative to how much time is spent in the other phases. Students will also be required to solve genetics problems that they are given and explain the implications of their results.

Students will analyze quantitative arguments by reading a scientific article every month and critiquing it to peers. They will present their views on the articles and offer suggestions for future research. Students will be assessed on their ability to analyze a quantitative argument on a quiz and be required to interpret and analyze hypothetical data and answer questions about the research. Students will conduct experiments in lab in order to learn how to apply quantitative models. Students will be assessed in the form of lab worksheets where they will be required to analyze and interpret their results and use a quantitative argument to support their conclusions. A lab final will provide laboratory based scenarios for students to quantitatively analyze and answer questions based on the labs completed during the semester.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

This course will examine the social and ethical impacts of cellular biology on the natural and human worlds in an effort to increase the student's civic knowledge and discourse. The students will discuss the impacts of various diseases and disorders on human life and look at the how they impact different cultures as well. The students will look at potential impacts of different cultural practices on topics like cancer and genetics. Students will also work in teams to present various aspects of a chromosomal disorder to the class. Students will also address sustainability by discussing modern medical therapies such as gene therapy, biotechnology, and genetically modified organisms.

Collaboration skills, teamwork and intercultural exposure will occur in the lab as they create diverse groups and work as a team to complete the lab each week. Students will collaborate in order to come to common conclusions through active engagement. These skills will be assessed each week via their lab quizzes and results from the experiments. As the students complete various labs on genetics, disorders, and biotechnology, they will discuss the ethical implications that may arise from modifying organisms, including humans, too much. They will determine to what extent modifications should be made and defend their opinions taking into consideration both the local impacts that would be felt as well as the global impacts of these procedures.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019





## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Genetics problems majors BI134

Filename: Genetics\_problems\_majors\_BI134.docx Size: 223.5 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000256

Sara Vigil - savigil@luna.edu

NM General Education Curriculum



## Application Form

Completed - Mar 26 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning

3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Geno Castillo
Title	Faculty
Phone	5054545304
Email	gcastillo@luna.edu

### Submitting Institution

Name of HEI	Luna Community College
Submitting Department	STEM

### Chief Academic Officer

Name	Sharon Lalla
Email	slalla@luna.edu

### Registrar

Name	Henrietta Maestas
Email	hmaestas@luna.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	ENVS
Number	1110
Title	Environmental Science & Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	NA
Number	NA
Title (if applicable)	NA

**New Mexico Common Course Information**

Prefix	ENVS
Number	1110
Name	Environmental Science

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate a knowledge of the basic concepts and vocabulary of environmental science. 2. Apply the basic concepts of ecology. 3. Demonstrate an understanding of animal and plant diversity and biogeographic distribution of life on planet Earth. 4. Demonstrate and understanding of the development of environmental science as the concepts of ecology developed

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

na

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

To develop critical thinking skills, students in ENVS 1110 will be engaged through in-class, homework, and laboratory exercises. Students will practice the scientific method, and engage in assignments using observation, interpretation using fundamental environmental and mathematical concepts. Such observations are identifying biogeochemical cycles, ecological communities, food chains, environmental health, pollution, toxicology, ecological restoration and alternative energy. Students will also use maps to determine flow direction of water, and solve environmental problems such as environmental awareness. Students will apply reasoning by continued characterization and identify environmental changes and by answering questions about these environmental changes. Students will form conclusions at the end of each lab. In the Environmental Awareness lab, students are presented with a topographic map of campus and will observe and describe basic environmental conditions

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning, ENVS 1110 students will solve environmental problems. Students will be practicing the scientific method by using numerical datasets. Students will calculate the rate of water flow, exponential growth, and annual amounts of greenhouse gases emitted by automobiles. The communication/representation of quantitative data will be done by tables, maps and written descriptions. Analysis of quantitative arguments will be done by evaluating the reasonability of the data collected. The application of quantitative models occurs when students use the numerical data to solve environmental problems. In the global climate change and automobiles lab, students will input the data collected into an excel sheet to calculate a parking lot sample mean for fuel consumption and Carbon Dioxide. The Students be able to estimate the average annual amounts of greenhouse gases emitted by automobiles.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

ENVS 1110 Students work in groups, which allows them to develop their personal and social responsibility. This enables students to develop skills such as teamwork, collaboration and communication, which are used in the real world. Most topics presented in ENVS 1110 will end with a discussion of human interactions with the environment. For example, resource extraction (oil, and natural gas). Students engage in concepts of human interaction with climate change. Students identify some causes that are affecting climate change such as hydrocarbon emissions, and work as a team to suggest on how it can be minimized

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

NA

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 26 2019



Upload Assessment

Completed - Mar 26 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

ENVS 1110\_Sample\_Assessment

Filename: ENVS\_1110\_Sample\_Assessment.docx Size: 11.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000102

John McVay - mcvay@nmml.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

#### Contact Information

Name	John McVay
Title	Professor, Assoc. Dean
Phone	575-624-8141
Email	mcvay@nmmi.edu

#### Submitting Institution

Name of HEI	New Mexico Military Institute
Submitting Department	Natural Sciences

#### Chief Academic Officer

Name	Douglas Murray
Email	dmurray@nmmi.edu

#### Registrar

Name	Christopher Wright
Email	Wright@nmmi.edu

#### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

#### Institutional Course Information



Prefix	BIOL
Number	1214/1224
Title	Principles of Biology I and II
Number of credits	4 each semester

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	BIOL
Number	1210L/1220L
Title (if applicable)	Prin. of Biology I/II Labs

**New Mexico Common Course Information**

Prefix	(No response)
Number	(No response)
Name	(No response)

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate factual knowledge of the concepts, facts, and theories in the following areas of biology: concept of life, chemistry of life, cell structure and function, genetics, evolution by natural selection, history of life on earth, taxonomy and examples of living organisms (including archaea, bacteria, protists, fungi, non-vascular plants, vascular plants, invertebrate animals, and vertebrates), human anatomy and physiology, behavioral responses, ecology and ecological issues.
2. Explain the scientific method and be able to apply the scientific method where appropriate.
3. Develop critical thinking skills when dealing with the current issues involving biological sciences to include medical, biotechnological and environmental issues.
4. Use appropriate equipment in a biology laboratory to perform demonstrations, conduct experiments, and develop observational and critical thinking skills.
5. Exhibit the learning skills necessary to succeed in the sciences as well as other disciplines.
6. Recognize and develop scientific responsibility to the natural world and society to practice science in an ethical and responsible, using all available data to attain and explain conclusions.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Please refer to the attached syllabus.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Learning and utilizing the scientific method addresses all components of problem setting, evidence acquisition, evidence evaluation, and reasoning/conclusions. Various laboratory exercises are utilized in which different components are stressed. In some the problem is pre-set while in others the student is expected to recognize aspects of a problem. Techniques of accumulating evidence are discussed and decided upon with emphasis on gathering all data available. Evaluation of the data (evidence) is stressed from the standpoint of utilizing all data points and avoiding bias in all cases. Conclusions and the reasoning behind them evolve from class and individual discussion of data and analysis.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students analyze experiments conducted in laboratory exercises and develop quantitative models and arguments to support conclusions. They then use the available literature to compare their data with that of others and address any differences in conclusions due to approach or methodology. They are assessed by the presentation of data in their reports and assemblage of quantitative information and arguments contained in research papers otherwise assigned. Students will study the application of models across various topics, the compilation of such models and the absolute necessity of using all available data to construct them in order to avoid any inclusion or exclusion that would introduce bias into the completed model. Research papers, lab reports, and models will be critiqued among peers.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and social responsibility of science practicing scientists is addressed in various ways. Sustainability is addressed by a plethora of examples and studies stemming from the professor's 30+ year career involving agricultural research. Techniques to make the impact of man more conducive to the natural order are considered along with the growing need for production as the human population continues to increase. Diverse methodologies of insect and disease management, crop production, use of GMO's and other science based approaches are discussed and reviewed. The controversy of such items of scientific interest as natural versus human induced climate change are approached from the standpoints of civic discourse and ethical reasoning both. Again the absolute necessity of anyone practicing in any scientific field to remain aware of and include all available data and an examination of the sources of that data is a topic of continuing discussion and assignment.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

2018-19 combined 1214-1224 fall syllabus - Prin Bio I and II

Filename: 2018-19\_combined\_1214-1224\_fall\_syllab\_aTaGHvJ.doc Size: 73.7 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000254

Sara Vigil - savigil@luna.edu

NM General Education Curriculum



Application Form

Completed - Mar 26 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills

throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Geno Castillo
Title	Faculty
Phone	5054545304
Email	gcastillo@luna.edu

### Submitting Institution

Name of HEI	Luna Community College
Submitting Department	STEM

### Chief Academic Officer

Name	Sharon Lalla
Email	slalla@luna.edu

### Registrar

Name	Henrietta Maestas
Email	hmaestas@luna.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	PHYS
Number	1115
Title	Survey of Physics & Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	NA
Number	NA
Title (if applicable)	NA

**New Mexico Common Course Information**

Prefix	PHYS
Number	1115
Name	Survey of Physics

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Employ formulas from given variables for motion. 2. Calculate the acceleration and rate of change. 3. Calculate work and energy parameters. 4. Describe the process of scientific inquiry as applied to physical phenomenon. 5. Solve problems scientifically through rational and logical thinking. 6. Communicate scientific information through written and oral presentations. 7. Apply quantitative analysis to scientific problems in physics. 8. Apply scientific thinking to real world problems in the area of modern physics.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

To develop critical thinking skills, students in PHYS 1115 will be engaged through in-class, homework, and laboratory exercises. Students will practice the scientific method, and engage in assignments using observation, interpretation using mathematical concepts. Students will identify and gather the data/information to address the problem, explain how to answer a specified problem, and check the validity of the solution. Students will develop the ability to express quantitative information symbolically, graphically, and in written language. Students will apply reasoning by continued characterization, identify and answer the questions of which physics concepts are occurring. Students will participate in lab and demonstrate their critical thinking skills by determining basic physical principles that can be tested with the device. Furthermore, the students will perform and analyze the results of these experiments. Students will form conclusions at the end of each lab.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning, PHYS 1115 students will solve problems related to physical world we live in. Students will be practicing the scientific method by using numerical datasets. Students will express quantitative information symbolically by using mathematical equations, graphically by drawing pictures to interpret and understand the problem, and by representing motion and vectors in two dimensional Cartesian plane. Students will apply their knowledge of physics to address and solves specific problems within physics. The communication/ representation of quantitative data will be done by tables, maps and written descriptions. Analysis of quantitative arguments will be done by evaluating the reasonability of the data collected. The application of quantitative models occurs when students use the numerical data to solve physical problems. In the energy lab, students will make observations of a ball rolling down 4 different shapes of ramps. The students will collect data of each ramp, which includes its height and length. The students will calculate the speed of each ball, as well as, its potential and kinetic energies during this experiment.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

PHYS 1115 Students work in groups, which allows them to develop their personal and social responsibility. This enables students to develop skills such as teamwork, collaboration and communication, which are used in the real world. Most topics presented in PHYS 1115 will end with a discussion of human interactions with the environment. For example, using energy concepts to formulate reasons for the using and not using of renewable energy sources. Students engage in concepts of human interaction with climate change. Students identify some causes that are affecting climate change such as hydrocarbon emissions, and work as a team to suggest on how it can be minimized.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

NA

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 25 2019



Upload Assessment

Completed - Mar 25 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Phys 1115\_LCC\_Sample\_Assessment

Filename: Phys\_1115\_LCC\_Sample\_Assessment.docx Size: 17.0 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000033

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



Application Form

Completed - Mar 13 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

## Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

## Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

## Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	PHYS
Number	1115
Title	Survey of Physics
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

#### **Co-requisite Course**

Prefix	PHYS
Number	1115L
Title (if applicable)	Survey of Physics Lab

#### **New Mexico Common Course Information**

Prefix	PHYS
Number	1115
Name	Survey of Physics

#### **A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

#### **B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply concepts of classical mechanics (such as velocity, acceleration, force, inertia, momentum, torque, work, energy) to simple static and dynamic systems
2. Apply concepts of thermodynamics (such as heat, temperature, internal energy, entropy) to simple processes
3. Apply concepts of electricity and magnetism (such as fields, potential, charge conservation, static and dynamic induction) to simple circuits, motors, and other simple electrical contrivances
4. Apply simple geometric and wave optics in simple situations

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Apply quantum theory in simple situations such as the Bohr model of the atom, dual nature of light, atomic spectra
2. Apply simple concepts of relativity

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: In some labs, students have a task to test a hypothesis in a physical situation such as current through resistors. They state a hypothesis to set the problem they will solve (Appendix A).

Evidence Acquisition: In most labs, students acquire evidence experimentally, such as by comparing the times that stacks of coffee filters take to fall (Appendix B) or measuring currents, voltages, and resistances (Appendix A).

Evidence Evaluation: Students evaluate their lab results for accuracy and discuss possible sources of error. If their experimental results disagree with theory, they reconsider the accuracy of their experimental data (Appendix C).

Reasoning/Conclusion: Students state conclusions based on their lab results (Appendix A, B, C). In homework and test problems, students determine what solution method to use (For examples from the final exam, see Appendix D, “Scheme” 2, Scheme 3b and c, etc.). Also, in some homework problems and test questions, students answer conceptual questions, showing the reasoning that led them to their understanding of the physical situation in question. (See Appendix D, Scheme 1, 3a, etc.) These are one of the two main assessments of the lecture course.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information, Application of Quantitative Models: On homework and on tests, students read questions and communicate answers using mathematical notation including units. They work the problems by applying quantitative models presented in the textbook and in class. (Appendix A). These are the other main assessment of the lecture course. Students do the same with problems that arise in the labs (Appendix A, C).

Students are given quantitative physics arguments (often in the form “A friend says...” ) and analyze them to determine whether they’re correct or incorrect, and if incorrect, what the mistake(s) is or are (Appendix E).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students answer homework questions on global issues of sustainability related to physics, such as energy sources (Appendix F).

In every lab, students work together, and in some, they reflect on their collaboration, addressing specific questions about division of labor and conflict resolution and how they could improve their teamwork (Appendix B).

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>



**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 10 2019



**Upload Assessment**

**Completed** - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**PHYS 1115 assignments**

**Filename:** PHYS\_1115\_assignments.pdf **Size:** 826.9 kB



**Upload Rubric**

**Completed** - Mar 10 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**PHYS 1115 rubric**

**Filename:** PHYS\_1115\_rubric.docx **Size:** 13.1 kB

**Application: 0000000126**

Daniel McLaughlin - dmclaughlin@navajotech.edu  
NM General Education Curriculum



**Application Form**

**Completed** - Mar 19 2019

**Application Form**

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Diné Studies

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	NAV
Number	221
Title	Navajo Government
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	None in CCNS
Number	(No response)
Name	(No response)

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Other - Choose 3 essential skills below

#### Choose 3 Skills

#### Responses Selected:

Communication

Critical Thinking

Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

NA

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Understand the Navajo Nation government. 2. Examine what constitutes a Nation. 3. Summarize the Navajo Governmental structure. 4. Compare and contrast the institutions of Navajo government. 5. Explore the Navajo Nation codes. 6. Demonstrate writing, research, and communication skills.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students develop a variety of oral and written communication skills in this class. They engage in classroom presentations, lectures, and discussions. They read critically. They analyze written descriptions of Navajo government, including an investigation of how the system is similar and different from other democratic systems. They read different historical perspectives on Navajo culture and the formation of the government. They study the impact of American history on the Navajo Nation, explore the concept of having one nation exist within another, and investigate ways in which tradition impacts governance. Students read and investigate a range of topics concerning Navajo government, including Navajo Codes, impacts of government in Navajo communities, the interrelationship of the three branches of Navajo government, Navajo Chapters, Navajo sovereignty, Navajo fundamental law, and Navajo voting, elections, and campaign finances. The students are engaged in class discussions about these topics and prompted to select one topic for further investigation. They follow the writing process approach in designing and creating essays, and present their findings in class.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students select a topic about Navajo Nation government to explore in depth. Sample topics include: three-branch government, Navajo Nation sovereignty, Diné fundamental law, Title XXVI (Navajo chapter law), Title II (Navajo Nation legislative law), and the origin of Navajo government. They research the topics that they select, using library and internet-based sources. They develop an outline with thesis statement and topic sentences. They must ensure that elements of the outline address the assignment topic. They write first drafts, and word-process those drafts. They are required to have at least one other person read and react to their essay. Next, they revise the first draft incorporating their reader's feedback. Then they create a second draft. From all of this, they create final essays with cover page and title and author information. They must ensure that all citations are properly formatted.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

NA

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

This class helps Navajo students become aware of their own government. It helps them understand who they are. They don't know many of the things that the course covers. They have been told "the American story" throughout their educational careers; they don't know the Navajo side of things. In this way, the course promotes bi- and multi-cultural understandings. It helps the students analyze history, persons, trends, developments, ideas, theories, causes, and effects from community and tribal perspectives. The course is central to the mission of Navajo Technical University: to help Navajo students understand who they are and where they are going. It promotes active engagement in civic issues and discourse, and involvement in solving issues that affect Navajo Nation residents.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

NA

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



## Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

NAV221

Filename: NAV221.sample-assessment.docx Size: 22.8 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000124

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



## Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning



3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Diné Studies

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	NAV
Number	211
Title	Navajo History
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	HIST
Number	2135
Name	Navajo History

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate a knowledge of historical events. a. Understand the chronology of Navajo history. 2. understand the causes and processes involved in the growth and development of the Navajo over time, including: 3. Understand the historical roots of the contemporary world a. Will understand the relationships between the institutions, conflicts, and values of today as the legacy of our predecessors. b. Will express their understanding in papers and classroom discussion. 4. Appreciate the study of history. a. Will enable students to relate events of the past to their own lives and times. 5. Will appropriately use these concepts in tests, papers, and in classroom discussion 6. understand historical methods. a. Critical analysis of texts and argument. b. interpretation of evidence. c. Conduct research in a variety of media. d. cite sources appropriately.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

The class promotes critical thinking within the context of historical analysis. Students read critical analyses of Navajo history. They read about the following topics: Coming of the Americans (contact with Europeans), Treaties, Troubled Times Between the Navajos and US Government, the Last Navajo War, The Long Walk, Bosque Redondo, Navajo Agents, Trading Posts, the Birth of Navajo Government, Modern Political Changes and Mineral Rights, the 1920's and 30's, the New Deal, Stock Reduction, WWII, Termination (in the 1950's), and Contemporary Navajo History. They formulate research questions about these topics, events, people, and developments that have frequently been misrepresented. They gather data from multiple perspectives regarding their re-search questions. They read, evaluate the data that they have collected, return to their research sources, and critically evaluate fallacies and misconceptions about persons, trends, and events concerning Navajo history.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

This class helps Navajo students become aware of their own history. It helps them understand who they are. They don't know many of the things that the course covers. They have been told "the American story" through-out their educational careers; they don't know the Navajo side of things. In this way, the course promotes bi- and multi-cultural understandings. It helps the students analyze historical events, persons, trends, developments, and causes, and effects from community and tribal perspectives. The course is central to the mission of the University: to help Navajo students understand who they are, where the Navajo people have been, and where they are going. With these understandings our students are better prepared to make a difference in Navajo society. Knowledge of their own history empowers students to deal more effectively with racism on and off the reservation. They are more sure about who they are. They are less apt to be rebellious and self-defeating. They know about what pathways to follow. They learn about responsible citizenship.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

I do the best I can with somewhat limited digital resources at our University. I do try to utilize our computer labs, library, and even students' own cell phones. Students must word-process their research papers. They must utilize computer resources at one of the computer labs. They must also conduct internet research. I take them to the library; our librarian shows them how to use the catalog and database resources. I also show students how to use their own phones for conducting Google searches on their research topic. Some students have tab-lets and use them instead of phones. They share if they have to. We do much of the research activities as a class in small groups. Students are expected to help one another and utilize common resources.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

NAV211

Filename: NAV211.sample-assessment.docx Size: 22.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000174**

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 21 2019

Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Zenaido Tres Camacho
Title	Professor, Natural Sciences
Phone	575-538-6251
Email	camachoz@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	BIOL
Number	206/207
Title	Principles of Biology: Cellular and Molecular Biology
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No



## Co-requisite Course

Prefix	BIOL
Number	2110L
Title (if applicable)	Principles of Biology: Cellular and Molecular Lab

## New Mexico Common Course Information

Prefix	BIOL
Number	2110/ 2110L
Name	Principles of Biology: Cellular and Molecular & Lab

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for BIOL 2110 Principles of Biology: Cellular and Molecular Biology

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

The science of Biology

Macromolecular structure and function

Cellular structures and functions.

Cellular respiration and metabolism.

The central dogma of molecular biology

Modes of inheritance

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

**Problem Setting:**

Understand that scientists rely on evidence obtained from observations rather than authority, tradition, doctrine, or intuition. The history and processes used in scientific discovery are contrasted with prior thought processes and these concepts are tested on the first exam.

**Evidence Acquisition:**

Students are expected to be able to describe the processes of scientific thought including observation, hypotheses formation, experiment design, positive and negative controls in experiments and alternative hypotheses. Students are required to demonstrate an understanding of the scientific process by formulation of a hypothesis and report how they would test the hypothesis based on a format of peer-reviewed journals.

**Evidence Evaluation:**

Students are required to gather information from an experiment in different teams. The students then compare their data with the data from other teams and then try and figure out where there are differences in the data and what might have happened to cause such variation.

**Reasoning and Conclusion:**

Students are required to formulate a hypothesis and then design an experiment to test the hypothesis. Students were assessed on their final reports that included evaluation of materials and methods and methods of data analysis. At the end of each exercise, students are required to identify specific strengths and weaknesses of their experiment and provide suggestions for further research.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

**Communication/Representation of Quantitative Information:**

The students work in groups to perform the experiments and collect the data and are required to provide individual reports and data analysis in graphical formats. The students are also quizzed about the process for a lab grade that focuses on the understanding of the data analysis and acquisition. The assessment of the understanding of the student includes identification of positive and negative controls and the extremes of the quantitative information.

**Analysis of Quantitative Arguments:**

Students are required to select and perform appropriate quantitative analyses of scientific observations. Students will be required to perform temperature effects of enzymes in laboratory exercises that emphasize data collection and analysis with quantifiable parameters that are then gathered and analyzed with graph, table and/or discrete statistical analysis and report the results and analysis for a laboratory grade.

**Application of Quantitative Models:**

Students collect data in the lab and apply discrete data points on a graph. Students are then expected to think outside the parameters of the experiment to make predictions about how different conditions would affect the outcomes. Students are asked to follow correlations and then take them to the extremes and determine the limitations of the quantitative measurements for and experiment.

Also, students are required to develop an idea for an independent research project and are required to then think about how they will collect the table in a tabular and graphical form for presentation. After the gathering of quantitative data, students are required to identify possible sources of error relating to the data sets.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the Natural and Human Worlds:

Students Sustainability on a cellular level involves the conversion of energy from one form to another. This is true for all cells, prokaryotic and eukaryotic. In biological systems energy can be converted into many different forms, from chemical to mechanical to electrical and light and sound. All of these forms of energy are created and used in biological systems and in biological systems the amount of energy must be sustained. As a major part of the curriculum (~20%) we discuss the sources of energy and how energy can be used and transferred in biological systems and how levels of energy can be maintained.

Ethical Reasoning:

Students should value science as a way to develop reliable knowledge about the world. An example is given for students to apply their reasoning skills in a scientific and proficient way. For example a search for vendors selling kits to create “structured water” can easily yield several sources for this product and each site makes major claims regarding their product. The exercises include asking students how they would test these claims if either a family member came forward and wanted to invest in these systems or if they worked for a government or other agency that wanted to use these systems in a broader context. Students are asked to use the scientific method to come up with answers to determine the claims presented in the advertisements including the development of a hypothesis and an experiment to test the claims.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtXsUi0CJHkV5-rKUrpNEBVUkNjaJPSJAaorjVJhNqiW?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 20 2019



### Upload Assessment

Completed - Mar 26 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## 2- BIOL 2110-2110L Princ of Bio Cell M Biol -Syllabus -WNMU

Filename: 2-\_\_BIOL\_2110-2110L\_Princ\_of\_Bio\_Cell\_\_EMNxsXE.pdf Size: 88.5 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000058

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 15 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	SANTA FE COMMUNITY COLLEGE
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

## Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	ASTR
Number	1115C
Title	Introduction to Astronomy (lec+lab)
Number of credits	(No response)

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)



## New Mexico Common Course Information

Prefix	ASTR
Number	1115C
Name	Introduction to Astronomy

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Discuss the night sky as seen from Earth, including coordinate systems, the apparent daily and yearly motions of the sun, Moon, and stars, and their resulting astronomical phenomena
2. List and apply the steps of the scientific method
3. Describe the scale of the solar system, galaxy, and universe
4. Explain telescope design and how telescopes and spectra are used to extract information about astronomical objects
5. Describe the formation scenarios and properties of solar system objects
6. Describe gravity, electromagnetism, and other physical processes that determine the appearance of the universe and its constituents
7. Describe methods by which planets are discovered around other stars and current results
8. Describe the structure, energy generation, and activity of the sun
9. Compare our sun to other stars and outline the evolution of stars of different masses and its end products, including black holes
10. Describe the structure of the Milky Way and other galaxies and galaxy clusters
11. Describe the origin, evolution, and expansion of the universe based on the Big Bang Theory and recent astronomical observations
12. Describe conditions for life, its origins, and possible locations in the universe

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

In a written assignment, students are asked to explain why Mars has much larger mountains and canyons than our own planet. Students assess the differences between Earth and Mars (problem setting) that they acquire from their textbook, journal articles and online resources (evidence acquisition). Students will find many differences between the planets including things like liquid water and mass/size of planets, students evaluate these differences to assess which ones might be important for explaining different geological features on the two planets (evidence evaluation). Students then synthesize the data, and hypothesize/conclude what character(s) can explain these planetary differences (reasoning/conclusion).

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students use telescopes in lab and discuss how to calculate telescope magnification. They use the appropriate equation (telescope focal length/eye-piece focal length) to calculate telescope focal lengths; they are assessed on homework assignments and exams (application quantitative models). In lab, students look at the moon through a telescope. The eye piece is changed to see qualitatively the difference in magnification; students also calculate the different magnifications to analyze if they can see the qualitative magnification attached with the quantitative calculations (analysis of quantitative arguments). Students communicate these differences in both words explaining the magnification differences and in numbers quantifying the magnification differences (communication/representation).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability & the natural & human worlds – In class discussions and lecture students address causes and impacts of the runaway greenhouse effect on Venus. As a homework assignment, students are asked to assess how the physical condition related to greenhouse effect on Venus support or refute global warming on earth. Students compare and contrast the impacts on the two planets and address issues of sustainability and human impacts on the natural world.

Ethical reasoning – Students watch the film “Nostalgia for Light” that focuses on the experience of the Chilean astronomers during the Pinochet regime; the astronomers reflect on their science, culture and history. As a written assignment, students are asked to reflect on the impact of politics on science specifically connected with the situation in Chile. See attached assignment.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 15 2019



**Upload Assessment**

**Completed** - Mar 15 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**ASTR111 assignment**

**Filename:** ASTR111\_assignment.docx **Size:** 12.8 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000146**

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
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### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	HIST
Number	101
Title	Survey of American History to 1865
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	HIST
Number	1110
Name	United States History I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- 1) Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries for the history of the United States from the pre-colonial period to the immediate aftermath of the Civil War.
- 2) Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.
- 3) Students will summarize and appraise different historical interpretations and evidence in order to construct past events.
- 4) Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluate credibility, perspective, and relevance.
- 5) Students will create well-supported historical arguments and narratives that demonstrate an awareness of audience.
- 6) Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.



## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will analyze and critically interpret significant primary texts and/or works of art across the semester. Emphasis will be placed in these visual and written materials upon key elements and drivers of American social, economic, and cultural institutions. These could include the role of a Euro-centric world view the relations with Native Americans, western religious and ideological belief systems as a keystone of Early American political and social development, and the key role of the political economy and the developing American sense of self, nationalism, and American Exceptionalism in early national history. In assessment, all students will take a comprehensive and objective final exam. Every multiple-choice question on the exam will be linked to one or more of the course objectives that address the area state competencies. Questions on the final exam will be based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. Ninety of the one hundred questions will come from the three hourly exams taken during the semester. The final ten questions will evaluate students' understanding of ideas and topics presented in the last class meeting.

The use of lecture/reading outlines, documentary films, YouTube clips, and review sessions at the start and end of each class will create an incremental sequence of student comprehension of the course objectives and competencies.

Students will analyze how an American republic developed, how a strong central government, opposing political parties, the rise of democracy changed the fabric of the republic.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives to identify the individual role of economy, society, government, religion, and culture in the history of the U.S. throughout the semester. The thematic concentration of the material particularly is focused upon ideas and traits related to social institutions, internal and external factors that influence the understanding of the present as related to an awareness of past heritages in American History, the nature and importance of belief systems in forming behavior and social mores, and how these systems are embedded in laws and social institutions – as related to the development of the American nation state from its colonial inception through the Civil War. In detail, students will discuss the factors and influences that combined to create an American society and recognize the path to revolution as it affected the development of a new American republic. Students will analyze the development of a strong central government, opposing political parties, the rise of democracy, and how each changed the fabric of the American republic. Students will trace the effects of industrialization and the rise of democracy as well as the causes for sectionalism and its consequences in America's history. Students will explain the impact of reform movements, especially abolitionism, on the American psyche and how slavery and the importance of political power in the national government led to a civil war. The use of lecture/reading outlines, documentary films, YouTube clips, and review sessions at the start and end of each class will create an incremental sequence of student comprehension of the course objectives and competencies.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

In this course across the semester, students will be exposed to and required to use a range of digital platforms and media sources, including PowerPoint slide presentations, historical maps, primary documents, historical documentaries, YouTube video clips, subject related websites, and a host of other digital venues to reinforce visually the contextual basis of ideas, events, and trends discussed during the course of this class. These tools will be implemented in this course through various means in the face to face classroom environment, the Interactive Television platform, and through the Canvas Digital Learning platform and its many digital capabilities. Students will learn the basic computer skills, technological steps, and platform skills to access a course shell within Canvas in all classes to access the above mentioned digital course materials, as well as listen to and observe specially-created recorded lectures by the instructor using Camtasia digital video technology. Also, within the Canvas course shell, students will also utilize exam and quiz study guides, practice quizzes, written assignments, and student-driven threaded discussions questions that allow interaction with fellow classmates and the instructor. Dual enrollment students, in an ITV setting, will be able to see, interact, and discuss with each other and the instructor the topics addressed.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## HIST 101-HIST 1110 Assessment

Filename: HIST\_101-HIST\_1110\_Assessment.pdf Size: 117.9 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## HIST 101-HIST 1110 Syllabus

Filename: HIST\_101-HIST\_1110\_Syllabus.pdf Size: 86.1 kB

## Application: 0000000129

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Scott Fritz
Title	Associate Professor of History
Phone	575-538-6823
Email	Scott.Fritz@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	HIST
Number	1120
Title	United States History II
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	HIST
Number	1120
Name	United States History II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for Humanities HIST 1120 United States History II

NMHED's Student Learning Outcomes for the Humanities

1. Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries for the history of the United States from the precolonial period to the immediate aftermath of the Civil War. Bloom Taxonomy's Cognitive Process: Remember and Understand.
2. Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context. Bloom Taxonomy's Cognitive Process: Analyse, Remember, Evaluate, and Create.
3. Students will summarize and appraise different historical interpretations and evidence in order to construct past events. Bloom Taxonomy's Cognitive Process: Understand, Evaluate, and Apply.
4. Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluating credibility, perspective, and relevance. Bloom Taxonomy's Cognitive Process: Remember, Understand, and Evaluate.
5. Students will create well-supported historical arguments and narratives that demonstrate an awareness of audience. Bloom Taxonomy's Cognitive Process: Create and Apply.
6. Students will apply historical knowledge and historical thinking "in order to infer what drives and motivates human behavior in both past and present." Bloom Taxonomy's Cognitive Process: Apply and Analyze.



## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

- 1) Identify, describe and explain human behavior and how it is influenced by social and political structures, geography, economics, culture, history, and social institutions.
- 2) Characterize processes within the context of complex and diverse communities through the study of significant primary texts, quantitative data, works of art, and literature across a range of historical periods and geographical areas.
- 3) Articulate how beliefs, assumptions, and values are influenced by factors such as political, economic, social, cultural, religious, and intellectual structures.
- 4) Apply this knowledge base of the social and behavioral sciences to identify, describe, explain, and critically evaluate relevant issues such as sustainability, ethical dilemmas, and other contemporary arguments as they apply to the world we live in today.

### **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The class will address New Mexico's general education essential skill of "Critical Thinking" by requiring students to address -- in essays -- the following Component Skills: Problem Setting, Evidence Acquisition, Evidence Evaluation, and Reasoning/Conclusion. Students will be required to perfect the component skill of "Problem Setting" by creating a research proposal where they ask questions about their topics (i.e. What do I not know about a topic?), and create a hypothesis (i.e. I anticipate that the following paper will argue successfully that women suffered from gender inequality [during a given historical period.]

The component skills of "Evidence Acquisition" and "Evidence Evaluation" will be accessed by having students develop an annotated bibliography where they will have to ask the questions: Are these sources peer-reviewed? Can I trust the sources that I chose? Once students begin writing their essays, the professor will ask the students if they have been able to prove that their hypothesis was correct and whether that educated guess had changed. Once students determine that their hypothesis (or revised hypothesis) can be proven with historical fact, the professor will assist them in developing their thesis. In this way, the component skill of "Reasoning/Conclusion" will be developed. This class will also align the essential skill of "Critical Thinking" with NMHED's Student Learning Outcomes for the Humanities and WNMU's Department of Social Sciences and Cultural Studies Shared Learning Outcomes. It will do this by having students ask questions like: 1) How did Americans shape their own, unique historical moments and how was society shaped by those moments from 1865-1900? 2) How has culture changed in the United States from 1865-1900? 3) How does history explain the ways human behavior was influenced by society, politics, geography, economics, and/or culture from 1865-1900? A sample essay guideline and syllabus (including a rubric) accompanies this certification form that will show how the course emphasizes critical thinking skills, acquiring and assessing information, asking research questions, developing hypotheses, and reaching conclusion.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The class will address New Mexico's general education essential skill of "Personal and Social Responsibility" by requiring students to address – in essays -- the following Component Skills: 1) Intercultural reasoning and intercultural competence; 2) Sustainability and the natural and human worlds; and 3) Ethical reasoning. Each of these component skills will be assessed by asking students to answer questions based on comparing cultures, assessing environmental history, and analyzing the ethics of decisions made by political leaders. Such questions would include 1) Compare and contrast the historical experiences of Anglos and Africans during Reconstruction. 2) What was the environmental impact of mining in the American West from 1865-1900? 3) Assess the ethical issues regarding the Supreme Court decision Plessy v. Ferguson (1896) and the court case's idea of "separate but equal." Students will have the opportunity to answer other specific essay questions, particularly those that focus on NMHED's Student Learning Outcomes for the Humanities and WNMU's Department of Social Sciences and Cultural Studies Shared Learning Outcomes. A sample essay guideline and syllabus (including a rubric) accompanies this certification form that will show how the course will stress intercultural reasoning and competence, sustainability of the natural and human worlds, and provide students opportunities to contemplate ethical issues.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

The class will address New Mexico's general education essential skill of "Information and Digital Literacy" by requiring students address -- in essays -- the following Component Skills: Authority and Value of Information, Information Structure, and Research as Inquiry. All three of these Component Skills will be met by using the following pedagogy: First, students will access the essay guideline by linking to the course's homepage. After that, they will be required to create a research proposal where they ask questions about their topics, create a hypothesis, and turn in an annotated bibliography where they judge the sources they will use. This will allow them to develop their research skills by finding sources in library holdings and digital databases, analyzing those sources critically for accuracy, and presenting their research through well-structured essays. Both primary and secondary sources will be taught, and an appreciation for original documentation and historiography will be promoted. While students will be required to verify a source's accuracy, they will also be encouraged to find ways to analyze bias within sources by, for example, telling the reader about the bias and how, by understanding that bias, the source can still be useful for understanding U.S. History. Furthermore, students will practice the structuring of information through writing classically-formatted essays that include an introduction, body, and conclusion, a thesis statement, and historical evidence, like names, places, events, and dates, that can prove and illustrate their theses. That is, they will find effective ways of presenting information that is logical, aesthetically pleasing, and comprehensible in their essays. The formatting method of Chicago Style/Turabian will be taught, showing students how historians cite differently than researchers in other academic disciplines. In this way, the class will fulfill NMHED's Student Learning Outcomes, such as "Students will distinguish between primary and secondary sources, identify and evaluate evidence..." A sample essay guideline and syllabus (including a rubric) accompanies this certification form that shows how this course will have an emphasis on accessing information, judging facts, developing interpretations, and presenting one's ideas effectively.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtXsUi0CJHkV5-rKUrpNEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



**Upload Assessment**

**Completed** - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**h1120 Guide Essay 1**

**Filename:** h1120\_Guide\_Essay\_1.doc **Size:** 46.1 kB



**Upload Rubric**

**Completed** - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**WNMU HIST 1120\_Grading Rubric**

**Filename:** WNMU\_HIST\_1120\_Grading\_Rubric.docx **Size:** 131.0 kB

**Application: 0000000128**

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 21 2019

**Application Form**

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assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	575-769-4753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Language, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	ENG
Number	ENG 102
Title	English Composition
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	ENGL 1110
Name	Composition I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1.Analyze communication through reading and writing skills. 2.Employ writing processes such as planning, organizing, composing, and revising. 3.Express a primary purpose and organize supporting points logically. 4.Use and document research evidence appropriate for college-level writing. 5.Employ academic writing styles appropriate for different genres and audiences. 6.Identify and correct grammatical and mechanical errors in their writing.



## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Students will become familiar with the process of writing.
2. Students will develop and refine critical listening, reading, and writing skills.
3. Students will analyze and evaluate oral and written communication in terms of situation, audience, purpose, aesthetics, and diverse points of view.
4. Students will express a primary purpose in a compelling statement and order supporting points in a logical and convincing manner.
5. Students will use effective rhetorical strategies to persuade, inform, and engage.
6. Students will employ writing processes such as planning, collaborating, organizing, composing, revising, and editing to create presentations using correction diction, syntax, grammar, and mechanics.
7. Students will integrate research correctly and ethically from credible sources to support the primary purpose of communication.
8. Students will engage in reasoned civic discourse while recognizing the distinctions among opinions, facts, and inferences.
9. Students will engage with and utilize information technology in order to write papers, conduct research, watch videos, and explore issues relevant to this course.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will write at least one research paper that includes academic sources that are properly integrated in the text and in a Works Cited/Reference page during the semester. The research paper must meet the requirements of the structure of an essay and include a discernible thesis, show research and its sources for support, and offer a proper introduction and conclusion. Additionally, students are required to give at least one oral presentation based on their individual research or the research paper that must include a visual component (i.e., a PowerPoint presentation, Prezi, etc.). They will evaluate and analyze a variety of speeches (e.g., Ted.com talks), readings, and videos according to situation, audience, and purpose, and students will gain awareness about societal, cultural, historical, educational, and political issues due to the diversity of the subjects that are presented in class.

Students will also acquire oral skills and learn behavior of acceptance, tolerance, and respect through discussions and observations, while they are learning to distinguish between opinions, facts, and inferences due to the assignments in research and reading.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Across the semesters, during class discussions, research and essay writing, and basic research activities, students will learn to reflect, analyze, compare and contrast, and solve problems of diverse subject matters. These diverse subject matters include, but are not limited to, social, cultural, political, historical, and educational topics relevant to students from diverse backgrounds. Students will also learn to discover credible sources from various resources— such as, the library databases, the library catalogue, and/or the Internet. They will also need to integrate reliable sources that they must evaluate according to the C.R.A.P. test (currency, reliability, authority, and purpose and point- of-view) to support their thesis and underlying arguments, observations, ideas, solutions, etc. Furthermore, students will learn to distinguish between academic sources, fake news, and popular sources (e.g., Wikipedia, blogs, news Websites, etc.). The final research paper will be assessed according to the attached rubric.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Students will experience and be exposed to the difference between academic sources, fake news, and popular sources (such as Wikipedia, blogs, news Websites, etc.) and also be introduced to the use of the library where they will explore the digital resources housed in the library's databases, such as e-Books, electronic articles, and electronic reference works during the semesters. Furthermore, students will be introduced to fact-based support of their observations, claims, and thesis through academic research. Canvas will be introduced to all students, and students will learn to navigate through its opportunities, as a resource. Students will learn to use online tutorial support (via Brainfuse and Purdue OWL), and will be introduced to videos and speeches that are housed online (e.g., YouTube, Kahn Academy, Ted.com etc.).

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

ENG 102-ENGL 1110 Rubric

Filename: ENG\_102-ENGL\_1110\_Rubric.pdf Size: 86.0 kB



Upload Rubric

Completed - Mar 19 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## ENG 102-ENGL 1110 Syllabus

Filename: ENG\_102-ENGL\_1110\_Syllabus.pdf Size: 108.7 kB

### Application: 0000000171

Don Scroggins - don.scroggins@clovis.edu  
NM General Education Curriculum



#### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	Don Scroggins/Alexandra Schipani
Title	Division Chair/Adjunct Professor
Phone	5757694909
Email	don.scroggins@clovis.edu

## Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Anthropology

## Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	ANTH
Number	111
Title	Dawn of Humanity
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	n/a
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ANTH
Number	1180
Name	The Dawn of Humanity

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. For students to understand and be able to apply the concepts of deep time.
2. To promote a greater understanding of human evolution and humankind's early journey across the globe.
3. For students to gain experience doing an individual research project with a corresponding presentation.
4. To gain a deeper understanding and appreciation for anthropology as a broad discipline through learning about its practice.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Each week, across the semester, students participate in online discussion boards. The format of the board consists of a prompt given that students use what they have learned during the week and apply it to a real-life question. Students research the prompt learning to develop strategies for understanding and then post their first response by Thursday and then evaluate at least two classmates posts to produce a pertinent argument as a reply by Sunday. In order to be successful in the discussions, students need to review all course materials including weekly readings, weekly PowerPoint presentations, and sometimes videos. Students' communication skills are assessed with a rubric based on the content of their posts as well as their ability to perpetuate the conversation in a meaningful way.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Final Paper: Students are required to submit a final paper that brings together all of the lessons we have learned this semester. Students will choose a culture that interests them for this paper. From there, students will acquire evidence through research and write about that culture, evaluating the pertinent and critical anthropological aspects and concepts previously discussed throughout this course. This paper serves to allow students to learn reasoning and conclusion skills using real-life applications of the topics contained throughout the course. Critical thinking skills are assessed with the final paper using a rubric that students may reference.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Discussion boards: The discussion boards all have a personal social element to them. Throughout the semester students are given the opportunity to reflect on the topics for the week and discuss what they have learned. Students learn to be respectful of others and their ideas. There is also a sense of personal responsibility because of the weekly structure. In order for the discussion boards to be successful, students must post their first discussion post by Thursday, allowing the development of personal and social responsibility by getting their work done beforehand and allowing ample time for collaborative replies on the following Sunday. This structured schedule facilitates learning personal and social responsibility. Students' personal and social responsibility skills are assessed with a rubric based on the content and timeliness of their posts that perpetuate a meaningful discussion.

Timeline Project: There is a deep sense of personal responsibility with this project. Students learn to maintain their timelines and manage priorities throughout the semester. They learn to stay current with the project each week so that they do not miss the major events that need to go on their timelines. The Timeline Project is due at the end of the semester and is facilitated with structured weekly reminders.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## ANTH 1180 Sample Assignments

Filename: ANTH\_1180\_Sample\_Assignments.docx Size: 13.6 kB



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## ANTH 1180 Syllabus-1

Filename: ANTH\_1180\_Syllabus-1.docx Size: 34.3 kB

## Application: 0000000230

Suzanne Balch - suzbal62@hotmail.com

NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning

3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Suzanne Balch Lindsay
Title	Asst VP Academic Affairs
Phone	5755622314
Email	Suzanne.Balch@enmu.edu

### Submitting Institution

Name of HEI	ENMU Portales
Submitting Department	Physical Sciences

### Chief Academic Officer

Name	Jamie Laurenz
Email	jamie.laurenz@enmu.edu

### Registrar

Name	DeLynn Bargas
Email	DeLynn.Bargas@enmu.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

**Institutional Course Information**

Prefix	PHYS
Number	123LP
Title	Physics of Music Lab
Number of credits	1

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	PHYS
Number	113 P
Title (if applicable)	Physics of Music

**New Mexico Common Course Information**

Prefix	PHYS
Number	1125L
Name	Physics of Music Lab

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Draw appropriate conclusions from quantitative scientific experiments.
2. Accurately and clearly communicate the results of scientific experiments.
3. Test ideas using modern laboratory equipment.
4. Use computer to analyze and report laboratory results.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Laboratory experiments usually involve the testing of a physical idea. 1. Numerous kinesthetic operations are performed, including measurements of physical quantities. Each of these operations is essentially a problem that must be delineated. The problem is to ensure that the kinesthetic operations and measurements are accomplished in such a way as to accurately correspond to the theory being tested. For example, the theory of the pendulum specifies that a massive, point particle be suspended from a point. The problem is “what is the length of the pendulum; the point of suspension to the top, middle, or bottom of the pendulum bob?”

2. The experiment itself consists of the acquisition of evidence in the form of measurements of physical quantities.

3. The validity of the data is continually evaluated during the course of acquisition. Judgments regarding inherent uncertainties versus avoidable error must be made.

4. Conclusion: In the end, the student must take the pile of numbers that have been collected and infer truth or reality from those numbers.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

1. As part of data analysis and laboratory reports, students often present their results by means of graphs and writing.

2. Students in each experimental group interpret, analyze, and critique information and calculations of other members of their group.

3. Every lab requires the application of a theoretical model to predict the results of the experiment.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

1. Civic discourse: Perhaps the greatest social responsibility in scientific work is the willingness to call accepted data and ideas into question. Once or twice a semester, students are assigned a lab which tests an idea which is wrong, despite having been promulgated by a recognized expert. Student lab reports are examined for evidence that they, without being told of the expert's error, have discovered for themselves that the self-evident idea is wrong. An example is Galileo's statement that the period of a pendulum is independent of the amplitude. This idea is violated weakly for larger amplitudes but students are generally unaware of this fact. Sufficiently careful measurements will show that Galileo was wrong.
2. Collaborative skills: Each lab requires group to act as a team in the collection and analysis of data.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

Pending

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHYS 123L - PHYS 1125L - Physics of Music Lab ex assess

Filename: PHYS\_123L\_-\_PHYS\_1125L\_-\_Physics\_of\_Mu\_efGdsSJ.pdf Size: 471.5 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000138

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.



# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	David Chavez
Title	Full-Time Faculty
Phone	224-4000 ext. 52257
Email	dcahvez287@cnm.edu

## Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

## Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	PHIL
Number	2220
Title	Greek Philosophy
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	PHIL
Number	2220
Name	Greek Philosophy

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Acquire a general understanding of the cultural and intellectual contexts out of which early and classical Greek philosophy arose.
2. Summarize and examine the basic philosophical theories of the early and classical Greek philosophers, which might cover their conceptions of knowledge, ethics, metaphysics, and political philosophy.
3. Identify and compare the various approaches and answers to fundamental questions asked by Greek philosophers.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

**C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

- (1) In doing the attached paper project, students delineate a problem or question by identifying, explaining, and historically situating a philosophical problem from the ancient period of philosophy. In doing so, students also explain the continued significance of the identified issue.
- (2) Students identify and gather the necessary information to address the problem by (a) accessing and using multiple scholarly research venues to (b) identify at least one appropriate primary text and at least two appropriate secondary research articles or sources.
- (3) Students evaluate evidence, proposals, and arguments for credibility and probable truth by employing various analytical tools introduced throughout the semester: (a) students use the logical concepts of validity and soundness to assess arguments; (b) student's use the analytical tools of cases and counterexamples to test proposals and generalizations.
- (4) Relatedly, students develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation by: (a) providing arguments that as far as possible conform to the logical standards (introduced in the course) validity, soundness, strength, and cogency and (b) anticipating and responding to possible objections to their proposals.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

- (1) In doing the attached paper project, students delineate a problem or question by identifying, explaining, and historically situating a philosophical problem from the ancient period of philosophy. In doing so, students also explain the continued significance of the identified issue.
- (2) Students identify and gather the necessary information to address the problem by (a) accessing and using multiple scholarly research venues to (b) identify at least one appropriate primary text and at least two appropriate secondary research articles or sources.
- (3) Students evaluate evidence, proposals, and arguments for credibility and probable truth by employing various analytical tools introduced throughout the semester: (a) students use the logical concepts of validity and soundness to assess arguments; (b) student's use the analytical tools of cases and counterexamples to test proposals and generalizations.
- (4) Relatedly, students develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation by: (a) providing arguments that as far as possible conform to the logical standards (introduced in the course) validity, soundness, strength, and cogency and (b) anticipating and responding to possible objections to their proposals.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

(1) In the attached paper project, students recognize the authority and value of information by: (a) finding valid scholarly works to inform their writing, (b) producing a substantive document in which they must properly credit and cite all external sources of ideas, explanations, and quotations (a strict non-plagiarism policy is explained and enforced); and (c) students apply an appropriate citation style.

(2) Students understand, communicate, create, and design in digital environments by: (a) constructing digital documents following appropriate styles and formatting; (b) communicate with instructor electronically following proper conventions; and (c) utilize Blackboard to access various course materials.

(3) In the attached assignment, students engage in an iterative process of inquiry that defines a problem or poses a question by: (a) Explaining and contextualizing a theoretical question; (b) explaining historically influential answers to that questions; (c) acknowledging and explaining serious objections those answers; (d) considering, therefore, alternative proposals about how to answer the core questions; (e) subjecting the alternative proposals to analytical scrutiny; (f) developing a personal proposal about how to answer the question.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHIL 2220 Paper Guidelines



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000081**

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

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### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	575-492-2833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information



Prefix	EN
Number	123A
Title	Report Writing for Technicians
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	2210
Name	Professional & Technical Communication

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Choose professional communication appropriate for audiences and situations.
2. Write in different genres of professional communication.
3. Identify the purpose of a work-related communication and assess the audiences' informational needs and organizational constraints.
4. Employ appropriate design/visuals to support and enhance various texts.
5. Demonstrate effective collaboration and presentation skills. 6. Integrate research and information from credible sources into professional communication.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Genre and Medium Awareness: In this course, students learn to identify the traits of and reproduce routine technical documents, including memos, emails, instructions, and reports. Students learn to develop effective visual aids for use in live and/or video presentations.

Application and Versatility: Students identify the purpose of communication, select the appropriate genre and tone, identify and address their audience in the appropriate context.

Strategies for Understanding and Evaluating Messages: Students practice evaluating the quality of sources, summarizing the salient points of technical documents. Students analyze the rhetorical strategies used in example communications

Evaluation and Production of Arguments: Students practice gathering, evaluating, using and sources in MLA or APA format. Students become familiar familiar with primary sources, secondary sources, and peer reviewed sources. Students learn the hallmark of professional sources and to avoid low credibility sources. Students learn to distinguish between evidence, reasons, and opinion in arguments.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Learners engage in dialogue to interpret the example documents. Students practice critical thinking skills related to reading, writing, and research. Students analyze example documents, including memos, emails, reports, slide decks, and social media posts to understand the problems and questions posed by authors. Students formulate appropriate responses to the questions and problems posed by the example communications.

Evidence Acquisition: Students use support and evidence from professional sources in researched reports.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine.

Reasoning/Conclusion: Students practice critical analysis by responding to problems posed by example documents presented by the instructor. Learners comment on each other's rough drafts. Instructors assess the quality of critical thinking with a rubric.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

**Authority and Value of Information:** The researched report in this course is the centerpiece assignment and is worth a minimum of 30% in all sections. Instructors present students with lessons on finding, evaluating, and citing sources in technical writing. Avoiding plagiarism through ethical use of sources and citation is a key topic. Instructors require the use of professional sources from reputable publishers and peer reviewed journals.

**Digital Literacy:** Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers. Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the researched report.

**Information Structure:** Students practice paraphrasing and summarizing information from professional sources. Learners use tools in a word processor and slide software to format information concisely and to construct appropriate visual aids for written and oral presentation.

**Research as Inquiry:** Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 18 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## 123A Certification

Filename: 123A\_Certification.doc Size: 299.0 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000141

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



Application Form

Completed - Mar 21 2019

## Application Form

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
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7. Other: 3 Essential Skills chosen by the institution

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### Contact Information

Name	Felecia Caton-Garcia
Title	Instructor of American Studies
Phone	505.224.3000
Email	fcatongarcia@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	AMST
Number	1130
Title	Introduction to American Popular Culture
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	AMST
Number	1130
Name	Introduction to American Popular Culture

**A. Content Area and Essential Skills**



## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Identify what are considered major approaches to the study of popular culture.
2. Identify key concepts and key debates in the study of popular culture.
3. Articulate how the study of popular culture cannot be divorced from politics and power relations.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will acquire and evaluate evidence when they determine the main ideas, key points, counterarguments, and rebuttals in a variety of genres and multi-modal texts. Students will analyze academic texts, journalism, film, television, musical compositions, and other texts in contemporary popular American culture in order to understand and evaluate the overt and underlying messages to direct and indirect audiences. Students will evaluate the authority and value of sources, those read and those employed in their own arguments, and will synthesize sources in the service of written, visual, and audial documents throughout the course of the class. Students will craft short reflections on readings, research proposals, and analytical texts. For example, in the Final Research Paper students are asked to problem set (see attached assignment) when they identify a minimum of five credible and relevant sources from which students will provide key supports of a clearly reasoned thesis that draws conclusions about a topic in American popular culture, such as the changing representations of transgender people in contemporary film, the embedded politics of Super Bowl halftime performances, or the significance of gender relations in the “Gamer Gate” phenomenon.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will use intercultural reasoning and gain intercultural competent when they read work by authors with diverse racial, ethnic, gender, sexual, and disabled identities. The readings will address the intersections of these identities and their relationship to popular culture. Whether through an examination of “trap” music or the use of avatars in online multi-player games, students will examine how each of these cultural forms reflects and shapes identity, power, and privilege in the United States. In examination of technological advancements, students will address sustainability and the natural and human worlds when they are also asked to reflect on the ways in which popular culture mediates human relationships within and among cultural groups, human relationships to the natural environment, and human relationships to the self. Students will collaboratively discuss issues in order to practice not only articulating and understanding diverse positions on complex issues but also how to address these complex issues within civic discourse, gaining local and global civic knowledge and engagement. In addition to short written reflections, students will present collaboratively and individually as well as drafting longer individual pieces.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Students will evaluate the texts used in the class as well as personal research conducted for the purposes of completing assignments using literacy skills to determine the authority and value of information. In addition to producing written work in class, students will also have the option to create digital elements such as webpages, blogs, and videos in order to communicate application of theory. Additionally, students will stage inquiries into elements of popular culture to examine the “meaning” of popular culture, pose a significant question about the meaning or meanings of cultural texts, and generate a reasonable analysis. Weekly, students will discuss and debate readings, extracting main ideas and key points to be used in later applications. Students will be asked to provide evidence of source credibility, accurate use of source material, and ethical citation strategies in assignments.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**AMST 1130 Final Paper and Presentation**

Filename: AMST\_1130\_Final\_Paper\_and\_Presentation.docx Size: 29.6 kB



Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## AMST 1130 Final Paper and Presentation Rubric

Filename: AMST\_1130\_Final\_Paper\_and\_Presentation\_Rubric.docx Size: 12.9 kB

### Application: 0000000253

Sara Vigil - savigil@luna.edu

NM General Education Curriculum



#### Application Form

Completed - Mar 26 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	Geno Castillo
Title	Faculty
Phone	5054545304
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## Submitting Institution

Name of HEI	Luna Community College
Submitting Department	STEM

## Chief Academic Officer

Name	Sharon Lalla
Email	slalla@luna.edu

## Registrar

Name	Henrietta Maestas
Email	hmaestas@luna.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	GEOL
Number	1110
Title	Physical Geology & Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	NA
Number	NA
Title (if applicable)	NA

**New Mexico Common Course Information**

Prefix	GEOL
Number	1110
Name	Physical Geology

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Articulate the development of geology as a modern science. 2. Demonstrate an understanding of Earth materials. 3. Demonstrate an understanding of processes that occur on the Earth's surface and processes that occur beneath the surface. 4. Articulate how the process benefits humanity through the use of natural resources. 5. Demonstrate the natural hazards that result from Earth processes.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

To develop critical thinking skills, students in GEOL 1110 will be engaged through in-class, homework, and laboratory exercises. Students will practice the scientific method, and engage in assignments using observation, interpretation using fundamental geologic and mathematical concepts. Such observations are identifying minerals, and the three main classifications of rocks, which are igneous, metamorphic and sedimentary. Students will also use maps to solve geologic problems such as plate tectonism, and presented with cross-sectional geologic maps to determine relative geologic age relationships. Determining which rocks are older and which rocks are younger. Students will apply reasoning by continued characterization and identify specimens and by answering questions about these specimens. Students will form conclusions at the end of each lab. An example is the Dating of Rocks, Fossils and Geologic Events Lab. Students use the relative age to identify the oldest to youngest rocks.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning, GEOL 1110 students will solve geological problems. Students will be practicing the scientific method by using numerical datasets. Students will calculate the movement of tectonic plates, and the density of minerals and rocks. The communication/representation of quantitative data will be done by tables, maps and written descriptions. Analysis of quantitative arguments will be done by evaluating the reasonability of the data collected. The application of quantitative models occurs when students use the numerical data to solve geologic problems. In the earthquakes lab, students analyze the three different types of seismic waves (primary, secondary, and surface), calculate their arrival times, graph it and determine where the earthquake originated.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

GEOL 1110 Students work in groups, which allows them to develop their personal and social responsibility. This enables students to develop skills such as teamwork, collaboration and communication, which are used in the real world. Most topics presented in GEOL 1110 will end with a discussion of human interactions with the environment in a geologic context. For example, resource extraction (oil, and natural gas). Students engage in concepts of human interaction with climate change. Students identify some causes that are affecting climate change such as hydrocarbon emissions, and work as a team to suggest on how it can be minimized.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

NA

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 26 2019



Upload Assessment

Completed - Mar 25 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Geol 1110\_LCC\_Sample\_Assessment

Filename: Geol\_1110\_LCC\_Sample\_Assessment.docx Size: 11.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000011

A. BAILEY Pagels - pagelsa@wnmu.edu  
NM General Education Curriculum



Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

#### Contact Information

Name	Manda Clair Jost
Title	Professor, Biology, Natural Sciences
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Email	manda.jost@wnmu.edu

#### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

#### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

#### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

#### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

#### Institutional Course Information

Prefix	BIOL
Number	1110
Title	General Biology
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	BIOL
Number	1110L
Title (if applicable)	General Biology Lab

**New Mexico Common Course Information**

Prefix	BIOL
Number	1110
Name	General Biology

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for BIOL 1110/ 1110L

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

“This course introduces nonscience majors to basic biological concepts including, but not limited to, the properties of life, biochemistry, cell biology, molecular biology, evolution, biodiversity, and ecology.”

- Students learn what distinguishes the Natural Sciences from other disciplines
- Students learn the difference between knowable things (that science can address) and unknowable things  
(that science cannot address)
- Students learn how the scientific method is structured and applied (i.e. hypothesis testing)
- Students gain an introduction to the basic structure and chemistry of water, carbohydrates, lipids, proteins, and nucleic acids
- Students learn the principles of Mendelian inheritance
- Students learn the central dogma of molecular biology, including transcription and translation
- Students learn about the evidence for evolution of life on Earth
- Students learn about three of the mechanisms of evolution: mutation, gene flow, and natural selection
- Students learn about the early origins of life on Earth (biopoiesis) and the evolution of Earth's environment
- Students learn the distinguishing characteristics of prokaryotic and eukaryotic cells
- Students gain an introduction to the basic biology of viruses and bacteria
- Students gain an introduction to the diversity of single-celled and multicellular eukaryotes
- Students gain an introduction to the basic biology of plants, animals, and fungi
- Students gain an introduction to the basic principles of animal behavior
- Students gain an introduction to the basic principles of population ecology, including Hardy-Weinberg, population growth, r- and K-selected strategies, and demography
- Students gain an introduction to autecology, community ecology, and symbiosis

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students state problems including but not limited to “a.)What kinds of questions can science address, and not address? b.)Why is water necessary for life as we know it? c.)How are patterns of inheritance predicted by probability? d.)What evidence exists for the shared ancestry of all organisms? e.)Why are some medical conditions (lactose intolerance; sickle-cell anemia) more common within certain ethnic groups? f.)Why have angiosperms (flowering plants) and arthropods (like insects) been so successful? g.)Why would natural selection favor certain animal behaviors (e.g. social behavior, combat, communication)? h.)Why do life history strategies differ between r-selected and K-selected species?

Evidence Acquisition: Students acquire evidence for these questions (in the same sequence given above) by a.)attempting to locate their own evidence to substantiate ideas that are knowable (or unknowable) to science; b.)learning about the unique physical properties of water, and how water differs from other substances; c.)examining numerical outcomes of Mendelian cross experiments; d.)learning to recognize putatively homologous characteristics in different species; e.)examining the biogeography of human populations and alleles; f.)examining the closely co-evolved biologies of flowering plants and insects; g.)watching in-class videos of animal behaviors; h.)comparing reproductive output and timelines for a diversity of plant and animal species

Evidence Evaluation: Students evaluate evidence for these questions (in the same sequence given above) by a.)defining the nature of ‘hard’ scientific evidence; b.)comparing the behavior of water with other substances (e.g. liquid lipids); c.)re-creating Mendelian genetics experiments through Punnett squares; d.)using phylogeny to distinguish between homology and convergent similarities in organisms; e.)evaluating how natural selection has established or eliminated certain alleles from

human populations; f.)comparing the diversity of angiosperms and insects with that of other kinds of eukaryotes; g.)debating the reproductive advantages of animal behaviors viewed in videos; h.)evaluating exponential vs. logistic population growth curves and how they relate to r- and Kselected strategies, respectively

Reasoning and Conclusion: Students are guided through answering questions like these themselves; and must explain the reasoning behind conclusions such as (in the same sequence given above)

a.)Evidence cannot be collected for some purported entities (such as ghosts) therefore science cannot investigate them; b.)since water is a polar molecule, it has the unique properties that make it essential for life; c.)since breeding outcomes are largely predicted by probability, we can understand how Mendel derived his laws of Segregation and Independent Assortment; d.)homologous traits are usually highly similar and phylogenetically linked, while analogous structures on distant phylogenetic branches imply convergent evolution; e.)different human populations have experienced different life conditions, explaining selection favoring certain alleles; f.)the close ecological associations between insects and flowering plants mutually explain the tremendous diversity of both; g.)since animal behaviors are costly, they nearly always confer some fitness advantage; h.)habitat resources and competition must ultimately drive r-selected and K-selected strategies



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information: Topics on lecture quizzes and examinations that require students to communicate/represent quantitative information include:

a.)evaluating the chemical structure of a water molecule (protons, neutrons, electrons) and sum all charges to show that while polar, a water molecule still has a net charge of zero; b.)examining the phenotype ratios such as 3:1 and 9:3:3:1 that correspond to classic Mendelian crosses of single-trait and dihybrid heterozygotes, and express these also as fractions and percentages; c.)practice conversion of nucleotide sequences to codon/amino acid sequences by parsing in units of 3; d.)examine phylogenetic trees and count the number of evolutionary changes that occur along branches in order to apply the criterion of parsimony; e.)understand how to notate and work with allele and phenotype frequencies in a population of any size ( $N$ =any number); f.)visualize and discuss large numbers at a scale that are beyond direct human experience, such as the lengths of eras and periods of geological time, and orders of magnitude; g.)report back on charts (e.g. histogram, pie) that estimate the species diversity of different lineages of organisms; h.)be able to present sets of genotype frequencies that correspond to Hardy-Weinberg equilibrium; i.)be able to balance the numbers of molecules in the chemical equation for the photosynthesis reaction; j.)explain exponential and logistic population growth and be able to link this to the slope of the line in population growth curves plotted on an x-y axis

Analysis of Quantitative Arguments:

The two main components of this course that analyze quantitative arguments, are 1.) an analysis of Mendel's laws of Segregation and Independent Assortment as derived from the numerical outcomes (phenotypes) of classic breeding experiments; and 2.) an analysis of the Hardy-Weinberg principle that allele frequencies in a population will not change in the absence of natural selection, mutation, gene flow/migration, or random genetic drift.

Application of Quantitative Models:

The two main components of this course that apply quantitative models are 1.) using Hardy-Weinberg terms ( $p^2$ ,  $2pq$ , and  $q^2$ ) to predict genotype frequencies in equilibrium populations when allele frequencies are known, and 2) using the logistic growth equation and the concept of "carrying capacity" ( $K$ ) to predict when population growth rate is at its maximum( $1/2 K$ )

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Intercultural Reasoning and Intercultural Competence: Students learn and debate the cultural reasons why faith-based opposition to evolutionary biology (e.g. “creationism” and “intelligent design”) is not really a religious phenomenon, but a cultural one that is much more common in the United States than in most other countries in the world.

Sustainability and the Natural and Human Worlds: This course has a unit on population growth that explicitly focuses upon how exponential population increase of humans requires dramatic shifts toward more sustainable practices — particularly the production of food and the use of water resources. Students learn that Earth is currently experiencing a mass extinction caused by human beings, primarily through habitat loss — and that this mass extinction rivals the scale of other mass extinctions seen in the geological record. Coral reefs and tropical rainforests are highlighted as habitat types that contain the most biological diversity and are most at risk by anthropogenic factors.

Ethical Reasoning:

The course offers many opportunities to (repeatedly) analyze ethical questions such as: do parents have a moral obligation to vaccinate their children, and/or keep unvaccinated children out of public schools? Do voters and policymakers maintain the personal right to pick and choose which matters of scientific consensus (e.g. climate change) they will accept or reject, at will? Are there any ethical considerations surrounding the use and marketing of GMOs, and the development and sale of pharmaceutical drugs? Do humans have an ethical obligation to adopt more sustainable practices in order to protect other species on Earth, and even our own?

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtxsUi0CJHkV5-rKUrpNEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 18 2019



**Upload Assessment**

**Completed** - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**3- BIOL 1110-1110L General Biology & Lab -Ex Asse-WNMU**

**Filename:** 3-\_BIOL\_1110-1110L\_General\_Biology\_\_La\_8exlfl1.pdf **Size:** 260.0 kB



**Upload Rubric**

**Completed** - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**2- BIOL 1110-1110L General Biology & Lab -Syllabus -WNMU**

**Filename:** 2-\_BIOL\_1110-1110L\_General\_Biology\_\_La\_VUFysPp.pdf **Size:** 148.3 kB

**Application: 0000000231**

Annemarie Oldfield - annemarie.oldfield@roswell.enmu.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Robin Billington
Title	Humanities Dept. Director
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### Submitting Institution

Name of HEI	Eastern New Mexico University-Roswell
Submitting Department	Humanities

### Chief Academic Officer

Name	Dr. Ken Maguire
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### Registrar

Name	Dr. Linda Neel
Email	linda.neel@roswell.enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	ART
Number	231
Title	Beginning Ceramics I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	na
Number	na
Title (if applicable)	na

## New Mexico Common Course Information

Prefix	ARTS
Number	1320
Name	Ceramics I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- 1.Explain the transformation of the ceramic material from raw clay form to glazed ceramic object
- 2.Demonstrate proficiency of technical ceramic skills
- 3.Explain larger concepts and design principles
- 4.Apply basic 3-D design principles in the formation of a work of art, as they apply to the ceramic media
- 5.Create ceramic works of art based on conceptual prompts
- 6.Critically evaluate a variety of artwork
- 7.Gain an understanding of the history of ceramic art from a multicultural perspective.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

same as above

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

In their exposure to the origin, nature of composition, application, and adaptive nature of clay, pupils will gain insight into the infinite possibilities this material provides. They will attain the skill to manipulate the material, understand how clay functions in the different stages, apply their knowledge in the production of a project worthy of their efforts and be able to constructively evaluate the results. Knowledge of clay and its abilities and limitations will be further explored in the form of sculptural production from wheel and hand-built construction. Technical insight into the glazing, staining, and finishing of pieces will be covered. Students will gain perspectives in various historical trends and cultures as well as careers related to ceramics.

Students create ceramics that visually communicate ideas drawn from their personal lives or perspectives on the world. Students will demonstrate skills such as utilizing color, shape, textures, and lines to create direct narrative elements or infer emotions. Students are then required to verbally present their work and elaborate on what worked well and identify areas for improvement. They must also be receptive to and respond to criticism of other students. They are required to evaluate the other students' work and provide detailed feedback. During group and individual teacher/student discussions, students share their learning process as they present the influences and origins of their ideas. Students will also note their discoveries and acquisition of knowledge in their art journals.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students are challenged to think creatively to apply ideas in original ways to their work. They must consider how they will communicate ideas visually and how the work will be received and understood by others. After receiving feedback from students and the instructor, they must consider what changes they might make to improve the work whether through improvement of the narrative/idea being communicated or improvements in the quality/application of the techniques. Students make choices about whether to create symmetrical or asymmetrical works, deciding whether the work is balanced with an equal or unequal number of elements on either side. Students will understand that symmetry can change the feeling that is emoted through the work. In upper divisions, students learn to mix glazes which uses mathematics and chemistry to create precise reactions in the glazes when the work is heated in the kiln. In lower levels, glaze mixing is introduced to the degree that students understand that different effects are produced based on the properties of glaze ingredients and the need for the precise application of formulas and ratios in the production of glazes. Students will use their acquired analytical knowledge to prepare a coiled pot that will be used as a final evaluation of acquired skills.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The making of traditional and contemporary ceramics utilizes materials that can pose health hazards if used improperly. Students demonstrate an understanding of the dangers of working with dry clay and glaze materials and know how to utilize dust masks and respirators. Students demonstrate a mastery of cleaning the art space and creating minimal dust. Students are aware that clay dust can stay suspended in air after several hours so it is essential that all cleaning be done with minimal dust creation. Ceramics requires personal responsibility and an understanding of safe handling techniques for one's own safety and the safety of others in the shared environment.

Critiques provide an opportunity for both reflection and candid assessment of their work and others, and to take responsibility for correctable deficiencies and catastrophic failures in a civil way. These skills will be modeled by the instructor. Students are exposed to intercultural artwork and required to evaluate the pieces based on social and cultural depictions of others' worlds. The instructor will use music from various cultures to inspire art that reflects the culture in a variety of ways.

Students are required to maintain a clean environment and to take responsibility for their working areas to ready the space for future use by others.

At showing of the work, students will demonstrate an ability to engage with the public about their work in a respectful and constructive manner.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

under construction

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



## Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Sample Assessment for Ceramics Class

Filename: Sample\_Assessment\_for\_Ceramics\_Class.docx Size: 13.2 kB



## Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Sample Rubric for art portfolio

Filename: Sample\_Rubric\_for\_art\_portfolio\_1tNKxi5.docx Size: 14.3 kB

## Application: 0000000195

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



## Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	SP
Number	224
Title	Intermediate Spanish II
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	SPAN
Number	2120
Name	Spanish IV

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students can participate with ease and confidence in conversations on familiar topics.
2. Students can usually talk about events and experiences in various time frames.
3. Students can usually describe people, places, and things.
4. Students can handle social interactions in everyday situations, sometimes even when there is an unexpected complication.
5. Students can make presentations in a generally organized way on school, work, and community topics, and on topics they have researched.
6. Students can make presentations on some events and experiences in various time frames.
7. Students can write on topics related to school, work, and community in a generally organized way.
8. Students can write some simple paragraphs about events and experiences in various time frames.
9. Students can easily understand the main idea in messages and presentations on a variety of topics related to everyday life and personal interests and studies.
10. Students can usually understand a few details of what they overhear in conversations, even when something unexpected is expressed.
11. Students can sometimes follow what they hear about events and experiences in various time frames.
12. Students can easily understand the main idea of texts related to everyday life, personal interests, and studies.
13. Students can sometimes follow stories and descriptions about events and experiences in various timeframes.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Problem Setting: Students examine cross-cultural and cross-linguistic interactions. Students state how communication issues cause problems and how clear communication and cultural knowledge can solve problems through cultural awareness and diplomacy.

Evidence Evaluation:

In this course, students not only learn language skills, but also critical thinking skills. Through critical thinking, students increase their vocabulary and cultural knowledge. In this course, students continue building the four basic skills (listening, speaking, reading and writing) that they began learning and practicing in previous Spanish classes. By the end of the semester, they have developed skills and coping strategies for filling in the gaps of imperfect comprehension. The course covers units thirteen to sixteen of the Vistas textbook. These units deal with topics like nature, life in the cities, wellbeing and the working environment. Instructors provide instruction in critical thinking related to readings of authentic materials and films throughout the course.

Reasoning/Conclusion:

Instructors provide instruction in critical thinking related to texts and short videos throughout the course. There are forums for oral assignments and group discussions that are used to debate ideas and showcase their reasoning process. There are forums for oral assignments and group discussions that are used to debate topics and showcase the students' reasoning process. Students read and comment in writing about nature preservation and how to prepare for a career, among other topics. Instructors evaluate critical thinking and evidence acquisition in the context of an essay assignment on the topic of career preparation and use a rubric to assess student learning.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: By this time the students are familiar with the basic elements of grammar and possess the vocabulary level that allows them to read materials intended for native speakers and maintain a conversation about a variety of topics. As they strive to reinforce the grammar concepts and increase their vocabulary, they also work to achieve a higher level of intercultural competence. When learning another language and culture, students will increase their awareness of the diversity of cultures beyond the United States and analyze similarities and differences between their own culture and others in relation to perceptions, beliefs, and behavior. The goal of language learning is not only the acquisition of communicative competence in a target language, but also the acquisition and development of intercultural competence. Learning a new language is also seen as a way to engage more effectively in the local and global communities. Students are encouraged to talk to native Spanish speakers in their local community and bring their findings to the class.

Ethical reasoning: Students engage in conversations and online discussions about culturally sensitive topics. When learning another language and culture, students will increase their awareness of the diversity of cultures beyond the United States and analyze similarities and differences between their own culture and others in relation to perceptions, beliefs, and behavior. Therefore, in this course students engage in conversations and online discussions about culturally sensitive topics like women equality at work or the protection of natural environments.

Collaboration skills, teamwork and value systems: Collaboration skills and teamwork are encouraged by working in groups to make the final presentations. The students intercultural reasoning is evaluated in the context of an online discussion about topics relating to wellbeing like the importance of working out and having proper nutrition, and instructors use a rubric to assess student learning.



**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Students learn the difference between credible information sources in Spanish and less credible sources. Students are presented with reliable language learning sources throughout the class

Digital Literacy: In the context of language learning, digital literacy is fundamental for students to be intelligent consumers of online language tools, and to be able to customize their own language learning process. Technology itself cannot guarantee learning but can enhance it when properly used.

Digital literacy is built-in in this course because the textbook used is a virtual one, part of the students' Vista Supersite account, which also allows students to use the website database and dictionaries.

Students learn to use composition tool to create and submit writing assignments online. Projects that develop the four basic skills (speaking, listening, reading and writing) can be extended to the Internet by using podcasts (listening and speaking) and blog entries or online discussions (reading and writing).

The nature of this course allows students to track due dates, save work, and access all assignments and resources. Instructors assess information and digital literacy in the context of online discussions and short essays or letters. Instructors use a rubric to assess student learning.

Information Structure: In this course students participate in oral assignments and group discussions in class. Some of these projects are later extended to the Internet by using podcasts (to practice listening and speaking skills) and occasionally short blog entries and essays to practice reading and writing.

Instructors use online resources to complement the virtual textbook, Vistas, that comes with the Supersite, a digital platform where students do a lot of their homework. Instructors use authentic materials like movies and excerpts from books originally written in Spanish to educate students about the library resources and benefits of using them. Students are already familiar with the Supersite database which allows them to track due dates, save work, and access all assignments and online resources. Instructors evaluate information and digital literacy in the context of a video discussion assignment and use a rubric to assess student learning.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



**Upload Assessment**

**Completed** - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**SP224 Sample Assignment**

**Filename:** SP224\_Sample\_Assignment.docx **Size:** 13.1 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000054**

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



**Application Form**

**Completed** - Mar 18 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joel Keranen
Title	Professor of Physics
Phone	5754922820
Email	jkeranen@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PH
Number	214
Title	Engineering Physics I
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	PHYS
Number	1310
Name	Calculus-based Physics I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Describe the relationships among position, velocity, and acceleration as functions of time.
2. Use the equations of kinematics to describe motion under constant acceleration.
3. Analyze linear motion using Newton's laws, force, and linear momentum.
4. Analyze rotational motion using torque and angular momentum.
5. Analyze motion using work and energy.
6. Describe and apply the fundamental properties of waves, oscillations, and periodic motion.
7. Develop a reasonable hypothesis.
8. Work effectively as part of a team.
9. Take measurements and record measured quantities to the appropriate precision.
10. Estimate error sources in experimental techniques.
11. Apply appropriate methods of analysis to raw data, including using graphical and statistical methods via computer-based tools.
12. Determine whether results and conclusions are reasonable.
13. Present experimental results in written form in appropriate style and depth.
14. Experience the relationship between theory and experiment.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

To develop critical thinking skills in this course, students will

1. Complete laboratory reports in the lab portion of the course wherein they will develop the ability to express quantitative information symbolically, graphically, and in written language.

(Communication/Representation of Quantitative Information)

2. Complete a peer graded assessment of a laboratory report to interpret, analyze, and critique information by others. (Analysis of Quantitative Arguments)

3. Participate in a cumulative lab practical as a part of the final exam for the laboratory. The practical consists of presenting student with a set of devices and instruments, asking students to determine physical principles that can be tested with the device and analyzing the results of these tests.

(Application of Quantitative Models)

4. Participate in the assessment: Force concept inventory. Students will solve conceptual problems by use of physics concepts of force. (Problem Setting and Reasoning/Conclusion)

5. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition and Evidence Evaluation)

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning skills in this course, students will

1. Use the knowledge taught in lecture and laboratory to address and solve specific problems in physics. (Problem Setting and Evidence Acquisition)
2. Participate in an assessment, “Mechanics Baseline Test”. This test consists of solving physics problems in mechanics, to test students on basic physical principles in mechanics. (Problem Setting, Evidence Acquisition, Reasoning/Conclusion)
3. Students will evaluate certain problems, within lecture and laboratory, for their physical validity to learn to develop conclusions, solutions, and outcomes that reflect an informed, well reasoned evaluation. (Representation of Quantitative Information and Reasoning/Conclusion)
4. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition, Evidence Evaluation, Representation of Quantitative Information, and Analysis of Quantitative Arguments)



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To develop personal and social responsibility skills in this course, students will

1. Write a group laboratory report on an experiment in which they work together as a team. Student interaction within their group will be integral in this experiment. (Collaboration Skills and Teamwork)
2. Visit a food production plant and write notes on all possible physics applications on the processes in the plant. The notes will be analyzed and discussed. (Civic Discourse, Civic Knowledge, Evidence Acquisition, and Reasoning/Conclusion)
3. Read an article about unethical behavior in physics to evaluate the evidence and data for credibility. Students will write a report about this article in the framework of concepts learned in lecture and laboratory. Specific examples of error and fraud are to be addressed. This assignment will assess the ability of the students to recognize and mitigate unethical behavior in their own work and others. Ethical reasoning will be central to this assignment. (Ethical Reasoning and Evidence Evaluation)
4. Students will write an essay on the importance of physics/engineering infrastructure on civilization and society. (Sustainability and the Natural and Human Worlds)

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

FCI

Filename: FCI\_H333w3n.pdf Size: 326.8 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000108**

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Anip Uppal
Title	Instructor, Political Science
Phone	505-224-4000, Ext 53006
Email	auppal@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydeny@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	POLS
Number	2110
Title	Comparative Politics
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	POLS
Number	2110
Name	Comparative Politics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Identify different political and economic regimes in a range of representative countries.
2. Assess tradeoffs among various political and economic regimes.
3. Compare and contrast the differences among cultures and subcultures, and the connections between politics and culture in different countries.
4. Describe the major issues facing a range of representative countries today.
5. Explain the connections between historical events and phenomena, on the one hand, and contemporary political and economic systems, on the other.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Throughout the semester, students communicate information in various mediums, including oral and written, to demonstrate the application and versatility of their communication and using strategies appropriate for that particular context. For example, students orally present research in class for an audience of their peers and provide written academic critiques on more formal assessments, such as a case study and short-essay questions for their final.

Students demonstrate strategies for understanding and evaluating messages by reading various course material, such as the textbook and articles, and identifying main points, arguments, and counterarguments. The material they are presented with challenges them to understand connections and contradictions in both historical and contemporary political and economic systems. Moreover, when students interact with course material they utilize a political theoretical lens for understanding and evaluating the arguments they are presented with and for analyzing global sociocultural phenomenon. Students evaluation and production of arguments is assessed through in-class presentations and written work. For example, students conduct research, evaluate sources, identify different types of claims (such as facts, opinions, and inferences), and create their own arguments pertaining to various political and economic regimes worldwide. Formal written work, such as the attached case study assessment, requires students to use evidence to support their conclusions and cite information ethically and appropriately using MLA or similar format

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The problem setting component of critical thinking is addressed during in class activities throughout the semester as students participate in small groups where they delineate various problems and questions pertaining to economic and political systems worldwide. The groups then acquire evidence and gather information and data necessarily to answer the problems/questions from a mix of sources, such as their textbook or articles. As part of this process, students reflect on and address their personal assumptions, as well as those of their peers.

Evidence evaluation is likewise demonstrated in small groups activities, as well as in other assessments such as the case study assessment (attached) and short-answer essay questions , where students evaluate the credibility and relevance of a variety of sources and demonstrate their awareness of the evaluation process.

Student reasoning and conclusion is assessed through various in-class and formal written assignments, such as their case study assessment (attached), where they evaluate the positive and negative attributes of an economic system and analyze the effects of this economic system on other global economic systems. Through various in-class and formal assessments, students engage in reasoning to build conclusions that are supported by evidence, logic, and reasoning.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students gain intercultural reasoning and competence by cultivating an understanding of the political framework and the dynamic forces (historical, social, spatial, political and economic) that shape the world in which we live. Students also develop insights and strategies for interacting with a variety of perspectives and address ethnocentrism. Through various assignments, such as in-class discussions, they demonstrate an understanding of the individual within society and the socio-political frameworks, processes, and circumstances that surround us. Moreover, students come to understand individual predispositions within the context of both local and global phenomena.

Students showcase collaboration and teamwork skills through in-class small group assignments which utilize various individual strengths to meet objectives and enhance their citizenship skills within a democratic system.

Student also engage in civic discourse by articulating their positions on a variety of political issues worldwide, both in-class and in formal written assessments. During in-class debates, students demonstrate their ability to participate in a respectful dialogue that acknowledges diverse perspectives and positionalities.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment



The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### POLS 2110 Assessment & Rubric (Revised)

Filename: POLS\_2110\_Assessment\_\_Rubric\_Revised.docx Size: 23.1 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### POLS 2110 Grading Rubric

Filename: POLS\_2110\_Grading\_Rubric.docx Size: 13.4 kB

## Application: 0000000135

David Torres - davytorres@nmmc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

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Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	David Torres
Title	Chair of Mathematics and Physical Science
Phone	5057472174
Email	davytorres@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Mathematics and Physical Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

### Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	MATH
Number	145
Title	Introduction to Probability and Statistics
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	MATH
Number	1350
Name	Introduction to Statistics

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the general concepts of statistics.
  - a. Explain and evaluate statistics used in the real world (from a news article, research project, etc.).
  - b. Use statistical vocabulary appropriately.
  - c. Distinguish between descriptive and inferential statistics.
  - d. Distinguish between qualitative and quantitative data.
  - e. Distinguish between populations and samples, and parameters and statistics.
  - f. Give examples of independent and dependent variables.
2. Presentation and description of data.
  - a. Present data graphically using histograms, frequency curves and other statistical graphs.
  - b. Interpret graphs of data, including histograms and shapes of distributions.
3. Summarize data using measures of central tendency and variation.
  - a. Calculate and interpret the mean, median, and mode to describe data.
  - b. Calculate and interpret range, variance, and standard deviation to describe data.
4. Present the concepts of probability.
  - a. Interpret basic probabilities.
  - b. Calculate probabilities using compound probability rules and the binomial distribution.
  - c. Calculate probabilities using the standard normal distribution and relate them to areas under the curve.
  - d. Determine if the binomial distribution can be approximated with the normal distribution.
  - e. Describe the relationship between the sampling distribution and the population

distribution.

f. Use the central limit theorem to approximate the probability distribution and calculate probabilities.

5. Compute point and interval estimates.

a. Determine the confidence interval for a parameter.

b. Interpret the confidence level and margin of error.

c. Determine whether a statistical technique is appropriate under stated conditions.

6. Perform hypothesis tests.

a. Determine whether a statistical test is appropriate under stated conditions.

b. Identify null and alternative hypothesis.

c. Perform and interpret statistical tests (e.g. z-test, t-test, one-tailed and two-tailed, one-sample, two-sample) and determine whether data is statistically significant.

d. State the conclusion of a hypothesis test.

e. Interpret a p-value as compared to a significance level.

f. Explain why a test can lead us to reject a null hypothesis, not accept one.

g. Distinguish between Type I and Type II errors.

7. Analyze data using regression and correlation.

a. Explain the difference between correlation and causation.

b. Construct and interpret scatter plots.

c. Calculate and interpret the linear correlation coefficient.

d. Determine and use the equation of a least-squares regression line between two variables to make predictions.

e. Interpret the meaning of the coefficient of determination.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

No other institution-specific student learning outcomes will be used.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

In the course, communication will be primarily assessed through written responses to specific problems (4 and 5) on the final. Written responses to questions in quarterly and midterm exams will also be used. Communication is also encouraged through group work in regular classroom activities which reinforce the student learning outcomes.

We focus on the communication required in Student Learning Outcome 7, Analyze data using correlation and regression.

Students will be asked to construct written responses to a mathematical problem by constructing the Pearson R correlation coefficient and the linear regression curve given available data. They will need to compute sums of the data and substitute the sums in formulas. Student will need to extract enough information from the description of the problem to identify the independent and dependent variables (thus requiring them to use strategies for understanding and evaluating messages). The Pearson R coefficient will need to be interpreted. Specifically, students will need to determine if the relationship between the variables is positive or negative, weak or strong based on the Pearson R value. The slope and y-intercept of the linear regression line will need to be identified and graphed alongside the original data points. Furthermore, students will need to explain that the linear regression line minimizes the sum of squares between the data points and the line, thus ensuring that they are aware of the importance of using this mathematical tool (and thereby addressing genre and medium awareness) and how it can be applied to any two variables (application and versatility). Students will then use the linear regression line to calculate a dependent variable, thus showing the application of the linear regression line in making predictions. They will decide whether they will support the prediction using the coefficient of determination, R squared, thus addressing the evaluation and production of arguments.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

In the course, critical thinking will be primarily assessed in multiple questions on the final. For example, Problem 1 determines whether students can distinguish between dependent and independent variables, and samples and populations. Problem 10 determines if students can evaluate whether the binomial distribution can be approximated by the normal distribution and if the normal distribution can be used correctly. Problems 11, 12, 13, and 14 ask students to formulate the alternative and null hypothesis and reject or retain the alternative hypotheses using a sign test, z-test, t-test, and t-test respectively. The concepts behind these problems need to be taught and reinforced through classroom exercises and homework. Due to time constraints, not all problems can be included on the final. Here we focus on the critical thinking required in Student Learning Outcome 7, Analyze data using correlation and regression.

Students will be required to gather information (evidence acquisition) from the description of the problem. The problem setting will need to be assessed by students before mathematical operations can begin. Students will need to determine the dependent and independent variables that must be used in computing the Pearson R correlation coefficient and the slope and y-intercept of the linear regression line. Evidence evaluation will involve collecting and summing numbers which will be used in formulas. Students will then interpret the results of the formulas. Based on the Pearson R coefficient, they will need to determine if the relationship between the variables is positive or negative, weak or strong. The slope and y-intercept of the linear regression line will need to be identified and graphed alongside the original data points thus assessing whether the line accurately represents the data. The linear regression line will be used to predict the value for the dependent variable given an independent variable. Students will decide whether they will support the prediction using the coefficient of determination, R squared (reasoning/conclusion). Thus critical thinking will be used to construct sums, to use them in the correct formulas, and to interpret the results in the context of the original problem description.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

In the course, quantitative reasoning will be primarily assessed in multiple questions on the final. For example, Problem 2 requires students to compute the mean, median, mode, and standard deviation using a set of data. Students also need to construct the frequency and relative frequency distribution. Problem 3 requires students to use the normal distribution in different settings. Problems 6 and 7 require students to use principles in probability and know when two events are independent. Problem 15 requires students to construct a confidence interval. The concepts behind these problems need be taught and reinforced through classroom exercises and homework. Here we focus on the quantitative reasoning required in Student Learning Outcome 7, Analyze data using correlation and regression.

Students will need to determine the dependent and independent variables that will be used to compute the Pearson R correlation coefficient and linear regression parameters. Students will be asked to use and apply mathematical formulas. Mathematical formulas are a concise and precise way of representing a sequence of mathematical operations, thereby providing a means of representing quantitative information. Students will need to construct sums of the independent and dependent variables, substitute the sums in the correct formulas, and use the order of operations correctly to simplify the formulas. The results of the formulas will be interpreted and analyzed. Based on the Pearson R coefficient, student will need to determine if the relationship between the variables is positive or negative, weak or strong. The slope and y-intercept of the linear regression line will need to be identified and graphed alongside the original data points thus assessing whether the line accurately represents the data. The quantitative model will be applied when the linear regression line is used to predict the value for the dependent variable given an independent variable. Students will decide whether they will support the prediction using the coefficient of determination, R squared. Thus quantitative reasoning will be used in collecting data, processing and analyzing the data using formulas, and interpreting and applying the model to make predictions.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/assessment-2/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



**Upload Assessment**

**Completed** - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**MATH 145 Final Review**

**Filename:** MATH\_145\_Final\_Review.pdf **Size:** 2.8 MB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000216**

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Benjamin Cline
Title	Assistant Professor
Phone	575-538-6207
Email	Clineb@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	COMM
Number	110 (1130)
Title	Public Speaking
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	COMM
Number	1130
Name	Public Speaking

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for COMM 1130

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Course Objectives:

- A. Analyze and evaluate oral and written communication in terms of situation, audience, purpose, aesthetics, and diverse points of view.
- B. Express a primary purpose in a compelling statement and order supporting points logically and convincingly.
- C. Use effective rhetorical strategies to persuade, inform, and engage.
- D. Employ speaking processes such as planning, collaborating, organizing, composing, revising, and editing to create presentations using correct diction, syntax, grammar, and mechanics.
- E. Students will integrate research correctly and ethically from credible sources to support the primary purpose of communication.
- F. Students will engage in reasoned civic discourse while recognizing the distinctions among opinions, facts, and inference.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

The third presentation will be what communication scholars call a “forensic speech” which is a speech which makes an argument for the acceptance of a particular fact as true. This presentation will be called “The Pecha Kucha” because it will follow the Pecha Kucha format, a Japanese form of public speaking where the speaker speaks while twenty images, displayed for twenty seconds each, play in the background.

A) Students will be evaluated based on their ability to deliver their speech extemporaneously (with notes, but not read, memorized, or impromptu ((impromptu means without a plan))). Genre and Medium Awareness

B) Students will be evaluated on their nonverbal communication, also called their “delivery.” Specifically, they will be evaluated on their ability to modulate their delivery to keep their presentation interesting to their audience and appropriate to their subject. Application and Versatility

C) Students will be evaluated on their ability to argue from facts to a credible thesis that the value for which they are arguing is a value the audience should share. Evaluation and Production of Arguments.

D) The student will be evaluated on their ability to cite credible sources and to give the audience an accurate indication of the sources’ credibility based on the reliability of the source. Strategies for Understanding and Evaluating Messages

E) Students will be evaluated on their ability to adjust their speech to the very fast, twenty images and twenty seconds each, format of the traditional Japanese Pecha Kucha -Application and Versatility

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The third presentation will be what communication scholars call a “forensic speech” which is a speech which makes an argument for the acceptance of a particular fact as true. This presentation will be called “The Pecha Kucha” because it will follow the Pecha Kucha format, a Japanese form of public speaking where the speaker speaks while twenty images, displayed for twenty seconds each play in the background.

A) The students will be evaluated on their ability to reason syllogistically (that means that if you believe the evidence, you have to believe their conclusion) from the evidence to a conclusion regarding facts Reasoning/Conclusion

B) The students will be evaluated on their ability to find sources that back up their argument. Evidence Acquisition

C) The students will be evaluated on their ability to give their audience a clear indication of why and to what extent the sources should be believed. Evidence Acquisition

D) Students will be evaluated on their ability to fit their arguments into the twenty slides of twenty seconds each format. Problem Setting



**Information & Digital Literacy. Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry**

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

The third presentation will be what communication scholars call a “forensic speech” which is a speech which makes an argument for the acceptance of a particular fact as true. This presentation will be called “The Pecha Kucha” because it will follow the Pecha Kucha format, a Japanese form of public speaking where the speaker speaks while twenty images, displayed for twenty seconds each play in the background. The students will be evaluated on their ability to reason syllogistically (that means that if you believe the evidence, you have to believe their conclusion) from the evidence to a conclusion regarding facts from library Research as InquiryThe students will be evaluated on their ability to find sources that back up their argument using print and digital library sources that back up the students’ arguments. Digital LiteracyThe students will be evaluated on their ability to give their audience a clear indication of why and to what extent the sources should be believed. Authority and Value of InformationStudents will be evaluated on their ability to produce accurate APA (American Psychological Association) reference pages to cite their sources. Information StructureStudents will be evaluated on their ability to fit their sources into the twenty slides of twenty seconds each format in a way that makes sense. Information StructureStudents will be required to produce bibliographies with both the Pecha Kucha and the policy speech and will be evaluated based on their ability to use sources effectively given the above rubric.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CJHkV5-rKUrPnEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



## Upload Assessment

**Completed** - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### WNMU COMM 1130\_Syllabus

**Filename:** WNMU\_COMM\_1130\_Syllabus.docx **Size:** 355.7 kB



## Upload Rubric

**In Progress** - Last edited: Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### WNMU Rubric for COMM 1130\_ Public Speaking

**Filename:** WNMU\_Rubric\_for\_COMM\_1130\_\_Public\_Speaking.docx **Size:** 366.0 kB

## Application: 0000000132

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



## Application Form

**Completed** - Mar 22 2019

## Application Form

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## Essential Skills

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

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### Contact Information

Name	Phillip Schoenberg,
Title	Assistant Professor
Phone	831-682-5605
Email	Phillip.Schoenberg@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

## Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	PHIL
Number	100 / PHIL 1115
Title	Introduction to Philosophy
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	PHIL
Number	1115
Name	Introduction to Philosophy

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for PHIL 1115 Introduction to Philosophy

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1) Comprehend and differentiate between philosophical approaches to questions within fields such as metaphysics, epistemology, ethics and aesthetics. 2) Critically evaluate various philosophical arguments and positions.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

An example of a final examination (attached) demonstrates what students are expected to do to develop the critical skills, and how the learning is assessed. 1) Students must clearly state a philosophical problem from the tradition, and often are required to situate the problem and/or interpretation historically and/or compare thinkers from different historical periods. Students are expected to state the position or problem clearly, and to offer an extended interpretation and/or critique. 2) Students, drawing on information from the text, lecture and discussion, must independently identify and assess the evidence for relevance to the specific prompt. 3) Students must evaluate arguments in terms, and to offer a rationale for their own claims about the text and/or philosophical problem. This includes assessing and evaluating the relevance and adequacy for evidence offered in support of claims. 4) Students are required to offer an interpretation or assessment of the philosophical ideas and to demonstrate the ability to articulate a reasoned evaluation by offering good reasons in accord with the canons of logic to the extent that these are introduced in the course (primarily informal logic).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

1) Students are asked critically to engage with various philosophical concepts and ideas from the tradition on issues that highlight major cultural differences. The essay prompts from the attached example of a final exam involving the question of the existence of God in medieval philosophy, or those in involving Martin Heidegger's interpretation of classical Greek culture are especially relevant to intercultural reasoning and competence. Non-Western thought is also introduced by way of comparison or contrast throughout the course assignments and lectures, e.g., comparing Zen Buddhism with Western Stoicism. 2) Students engage with issues of sustainability and the natural and human worlds in the course by assignments involving ethical theory (Aristotle, Kant and Mill) from the tradition. Students are asked in homework assignments and/or discussion/class activity to apply ethical theories to ethical questions raised by climate change (e.g. climate justice). 3) Students demonstrate ethical reasoning by applying representative ethical theories from the tradition (Aristotle, Kant, Mill) to real-life, everyday problems faced by ordinary people like themselves and people they interact with every day. This is evident in the final exam (attached, especially the prompts re. Kant), but is also integral to the assignments associated with these theories (see No. 2, above). Students are also asked to make arguments according to the principles of different ethical theories, and to compare or contrast different approaches (e.g. Classical Greek emphasis on character vs. Modern emphasis on action). 4) As an introduction to philosophy course, the course introduces students to the importance of facts in evidence and the normative role of truth in argumentation. The course also emphasizes the difference between, and relevance of sincerity and authenticity. A candid review of the attached example of a final examination makes it immediately evident that the course meets the requirements for "civic discourse, civic knowledge and engagement, both local and global." The best example are the prompts regarding Kant's "An Answer to the Question 'What is Enlightenment?'" and those about Ralph Waldo Emerson. These short essay prompts ask students to reflect on the enduring value of the Enlightenment in our contemporary public discourse, but also invites a critical analysis of the Romantic critique of the Enlightenment.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

The skill set surrounding information and digital literacy are developed by students through a number of written exercises, especially the weekly assignments. 1) The course requires students to engage in evaluating (questioning) the authority and of the individual authors of the tradition assigned, as well as the value and authority of their peers' and professor's interpretation in the lecture and discussion. The basic form of philosophical education since Socrates has been open and sincere conversation aiming at the truth through the critical examination and re-examination of proposed claimants to the truth. All assignments in the course, similarly to the attached example of a final examination, require the student to assess the authority and evaluation of claims from the tradition as well as their professor and fellow students in writing and class discussion. In written work students are expected to use quotations, and appropriately to summarize, paraphrase and cite relevant source material. 2) Students are required to use Canvas, the online learning environment used at WNMU to upload assignments. They are expected to use Canvas and "Zoom" to communicate with their professor and fellow students on a regular basis. All required assignments must be created and submitted online. 3) Students are expected to question the doctrines and problem explanations offered by the philosophical tradition, to engage in critical conversation verbally and in writing with their professor and peers. Reading, writing and discussing a topic are the very basis of research as inquiry, and students are required in both minor and major assignments to demonstrate an ability and willingness to ask questions in search of answers.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtxsUi0CJHkV5-rKUrpNEBVUKNjaJPSJAaorjVJhNqiW?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019





## Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### WNMU PHILOSOPHY 1115 Exam

Filename: WNMU\_PHILOSOPY\_1115\_Exam\_l8WlrVI.docx Size: 220.4 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000045

Ian Williamson - iwilliamson@nmhu.edu

NM General Education Curriculum



## Application Form

In Progress - Last edited: Mar 12 2019

## Application Form

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### Contact Information

Name	Ian Williamson
Title	Assoc Vice President for Academic Affairs, Grants, & Contracts
Phone	505-454-3342
Email	iwilliamson@nmhu.edu

### Submitting Institution

Name of HEI	New Mexico Highlands University
Submitting Department	Natural Resources Management

### Chief Academic Officer

Name	Roxanne Gonzales, Ed.D
Email	rmgonzales@nmhu.edu

### Registrar

Name	Thomasinia Ortiz-Gallegos
Email	togallegos@nmhu.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

**Institutional Course Information**

Prefix	FOR
Number	200
Title	Forestry Field and Safety Practices
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	FORS
Number	2010
Name	Forestry Field and Safety Practices

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

N/A; this is a unique course.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Students will be able to use various types of forestry equipment typically used by practicing professionals.
2. Students will learn, discuss, and practice common safety measures in the field to minimize the potential for injuries and to align with common practices in the profession.
3. Students will be able to apply a variety of ecological forestry methods to assess and measure vegetation and forest stand conditions and use these skills to evaluate possible forest treatments.
4. Students will gain skills and abilities in effective collaboration, specifically working in groups and teams.
5. Students will hone communication skills, including written and oral skills, and improve their quantitative and analytical skills through the analysis of data collected in the field.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

The course is divided into two parts, the first consisting of intensive field work for two weeks and the second consisting of writing assignments. The main writing assignment is a final report that includes the development of several natural resource management questions based on the data individual teams were responsible for collecting in the field. The resource management questions are developed after they have completed the field work instead of prior to entering the field. The students are exposed to a wide breadth of ecological measurement techniques and therefore, must be able to narrow down and present resource management questions relevant to only a portion of the data collected. They are expected to be able to review their data, consider applications of those data, and then develop the questions as a team. The questions must be well-articulated, answerable, and the answers data-driven. All of the questions must pertain to topics covered during the field discussions with the instructor. As the teams develop their management questions and prepare their reports, they must include a statement of resource concern (i.e., wildfire, watershed management) and present reasonable arguments for addressing those concerns using the data they collected. They are expected to utilize the scientific literature to support their arguments and conclusions presented in their final reports.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

The students spend two full weeks in the field at the beginning of the semester working in individual teams to collect relevant field data related to ecological characteristics of forest systems. During this time, they must learn standard field techniques for measuring forest structure and other ecosystem features and be able to apply these techniques correctly in the collection of data. While in the field, they work in individual teams but share learned skills among other teams to ensure the correct data are being collected. They spend the remaining part of the semester compiling the data, analyzing and interpreting those data, and then prepare a final report discussing how they used those data to address several natural resource management questions. While working on the final report, they must be able to convey their data analysis to one another and be able to communicate their results effectively to the other team members. They must identify the proper data spreadsheets and various analytical programs to analyze their data which may include more complex computer modeling programs that they need to learn during the semester. Their data must appropriately collected, entered into a database, analyzed using appropriate software, and correctly presented in a final report.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Throughout the course, students engage in discussions pertaining to features of ecological systems, in addition to measuring features of those systems. Students are responsible for taking notes throughout the field work portion of the class, and then arrange the material into a general discussion presented as a writing assignment to the instructor. The subject matter is organized around a discussion of the way various environmental, team, and social topics are interrelated both in how they performed their field work in teams as well as how they are able to relate the field work to cultural and social aspects of natural resource management. This is focused on the application of sustainable resource management to aid in solving issues related to the degradation of natural resources used by humans. Because the field class is divided into smaller teams, they also are expected to discuss the way the felt the team operated. They identify things that did and didn't seem to get done in a group setting. They were responsible for addressing questions such as: What were the characteristics of an effective team member? Did certain people take on leadership roles? Why did they end up leading? What were the biggest problems you had working in the team? This is the first of two writing assignments submitted by students. In the second writing assignment, students work as individual teams to prepare a final report on the data they collected in the field. They are responsible to prepare this report as a team and must work together to ensure its timely completion and adequacy of content.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



## Upload Assessment

Completed - Mar 12 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Assessment FORS 2010

Filename: Assessment\_FORS\_2010.pdf Size: 127.4 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000065

Henri Ndaya - Ndaya@nmml.edu

NM General Education Curriculum



## Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning



3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	HENRI - NDAYA
Title	Assistant Professor of Mathematics
Phone	5756248152
Email	ndaya@nmmi.edu

### Submitting Institution

Name of HEI	New Mexico Military Institute
Submitting Department	Science and Mathematics

### Chief Academic Officer

Name	Murray, Douglas
Email	dmurray@nmmi.edu

### Registrar

Name	Wright, Chris
Email	wright@nmmi.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

**Institutional Course Information**

Prefix	MATH
Number	MATH 1614
Title	Calculus I
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

No

**Will this course only count toward General Education for the AAS degree (at your institution)?**

Yes

**Co-requisite Course**

Prefix	MATH
Number	MATH 1113 & MATH 1213 or MATH 1604
Title (if applicable)	College Algebra & Trigonometry or Pre-Calculus or equivalent experience or a satisfactory score on the math placement exam

**New Mexico Common Course Information**

Prefix	MATH
Number	1510
Name	Calculus I

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNs SLOs for MATH 1510, Calculus I

Upon completion of the course, the student will be able to:

1. interpret a function from an algebraic, numerical, graphical and verbal perspective and extract information relevant to the phenomenon modeled by the function.
2. verify the value of the limit of a function at a point using the definition of the limit.
3. calculate the limit of a function at a point numerically and algebraically using appropriate techniques including l'Hospital's rule.
4. find points of discontinuity for functions and classify them.
5. understand the consequences of the intermediate value theorem for continuous functions.
6. interpret the derivative of a function at a point as the instantaneous rate of change in the quantity modeled and state its units.
7. interpret the derivative of a function at a point as the slope of the tangent line and estimate its value from the graph of a function.
8. sketch the graph of the derivative from the given graph of a function.
9. given a table of function values, approximate the value of the derivative at a point using the forward difference quotient and the centered difference quotient.
10. compute the value of the derivative at a point algebraically using the (limit) definition.
11. derive the expression for the derivative of elementary functions from the (limit) definition.
12. be able to show whether a function is differentiable at a point.
13. compute the expression for the line tangent to a function at a point.
14. interpret the tangent line geometrically as the local linearization of a function.
15. compute the expression for the derivative of a function using the rules of differentiation including the power rule, product rule, and quotient rule and chain rule.

16. compute the expression for the derivative of a composite function using the chain rule of differentiation.
17. differentiate a relation implicitly and compute the line tangent to its graph at a point.
18. differentiate exponential, logarithmic, and trigonometric and inverse trigonometric functions.
19. obtain expressions for higher order derivatives of a function using the rules of differentiation.
20. interpret the value of the first and second derivative as measures of increase and concavity of a functions.
21. compute the critical points of a function on an interval.
22. identify the extrema of a function on an interval and classify them as minima , maxima or saddles using the first derivative test.
23. use the differential to determine the error of approximations.
24. understand the consequences of Rolle's theorem and the Mean Value theorem for differentiable functions.
25. find the anti-derivative of elementary polynomials, exponential, logarithmic and trigonometric functions.
26. interpret the definite integral geometrically as the area under a curve.
27. construct a definite integral as the limit of a Riemann sum.
28. approximate a definite integral using left sum, right sum, midpoint and trapezoidal rules.
29. interpret the indefinite integral as a definite integral with variable limit(s).
30. interpret differentiation and anti-differentiation as inverse operations (Fundamental Theorem of Calculus, part 1).
31. interpret the anti-derivative as a definite integral with variable limit and implement this expression on graphing platforms.
32. evaluate a definite integral using an anti-derivative (Fundamental Theorem of Calculus, part 2).
33. use substitution to find the anti-derivative of a composite function.
34. apply basic optimization techniques to selected problems arising in various fields such as physical modeling , economics and population dynamics.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Upon graduation from NMMI, a cadet who has completed coursework in the field of mathematics will be able to:

1. Demonstrate mathematical knowledge and skills.
2. Demonstrate mathematical models to solve problems in a variety of contexts.
3. Employ current technology for individualized learning and problem solving and the preparation of assignments.
4. Exhibit the learning skills necessary to succeed in mathematics.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will communicate mathematical findings orally in small group setting and will communicate mathematical findings in written form through homework assignments and exams. Written and oral communication includes, but is not limited to, using appropriate mathematical terminology, expressing sound mathematical reasoning and logic, using appropriate mathematical theorems, and solving application problems in a variety of contexts. To successfully communicate mathematical findings in written form, students must be able to identify and use correct mathematical terminology and mathematical theorems that apply the situation, read each problem carefully to understand how to solve a given problem, and must show their work through a logical progression of steps to formulate an appropriate solution. Students must also be able to rationalize and justify their logic to peers in group work settings. The department assesses oral communication of mathematics informally, but uses a common final exam to formally assess students' abilities to communicate mathematics in written form. The grading rubric for assessment of communication is included in the report.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Through class discussions, graded written homework, graded online homework assignments, exams, and in-class problems and group work, students will develop their critical thinking skills. Students need exposure, explanation and repetition of a variety of problems in a variety of contexts to develop critical thinking skills in mathematics. Faculty model critical thinking skills for their students through problem delineation, evidence acquisition and evaluation and drawing appropriate conclusions. Then faculty assign problems to students so that they can develop their own critical thinking skills. First, students must learn how to delineate mathematical problems. This includes identifying mathematical terminology and discerning what the unknown quantity or quantities are that will solve a given problem. Next, students must determine the necessary problem solving techniques, formulas or mathematical theorems that apply to a given problem. Third, students must actually apply the necessary solution technique or formula or mathematical theorem to develop the appropriate solution. Finally, this process also includes the ability to determine feasibility of solutions. Critical thinking skills are at the heart of every problem in a mathematics course. The department assesses critical thinking skills informally through class discussions, in-class problems and group work. Formally, the department assesses critical thinking using a common department final exam. The grading rubric for assessment of critical thinking is included in the report.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

In Calculus I, quantitative reasoning skills are an important skill set to student success and students' abilities to provide the knowledge obtained in Calculus I to applications in their respective majors. In this course, students must express quantitative information correctly, symbolically, and graphically, primarily in written form. Symbolic representation and communication of quantitative information is key in finding limits, differentiation, integration, and graphing functions. Additionally, students must be able to apply quantitative models to solve real-world problems such as related rates problems, optimization problems and motion problems. Faculty introduce these skills through class discussions and lectures, in-class problems, group work, homework assignments and exams. Informally, faculty assess quantitative reasoning through group work, in-class problem solving exercises, homework, and chapter exams. Formally, faculty assess quantitative reasoning through a common departmental final exam. The grading rubric for assessment of quantitative reasoning is included in the report.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

F. Assessment Plan (Must be on file with HED by August 1, 2019) Link to  
Institution <https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 15 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Math 1614 Assessment Calculus I

Filename: Math\_1614\_Assessment\_Calculus\_I.pdf Size: 97.7 kB





Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000192

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills

throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	SP
Number	114
Title	Beginning Spanish I
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	SPAN
Number	1110
Name	Spanish I

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students can communicate on very familiar topics using a variety of words and phrases that they have practiced and memorized,
2. Students can present information about myself and some other very familiar topics using a variety of words, phrases, and memorized expressions.
3. Students can write short messages and notes on familiar topics related to everyday life.
4. Students can often understand words, phrases, and simple sentences related to everyday life.
5. Students can recognize pieces of information and some- times understand the main topic of what is being said.
6. Students can understand familiar words, phrases, and sentences within short and simple texts related to everyday life.
7. Students can sometimes understand the main idea of what they have read.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

**C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students are introduced to cross-cultural and cross-linguistic interactions. Students state how communication issues cause problems and how clear communication can solve problems.

Evidence Evaluation:

In this course, students not only learn language skills, but also critical thinking skills. Through critical thinking, students increase their vocabulary and cultural knowledge. This course covers four units of the Vistas textbook that deal with topics like personal introductions, college life, family and pastimes. To assess student learning, students are required to pass a final written exam and do an oral team presentation in which they either maintain a dialogue with a classmate or a tutor demonstrating the use of proper greetings and common nouns, or individual presentations about a topic they are interested in, for example, a favorite pastime. They also write simple reports about topics like the classes they are taking or their family tree.

Reasoning/Conclusion:

Instructors provide instruction in critical thinking related to simple texts throughout the course. Students read and comment in writing on the Supersite about works of art and write discussions about their values and impact on their audience. For example, they analyze the works of Ecuadorian painter and muralist Oswaldo Guayasamin and reflect on the cultural significance of his work, departing from the “Panorama” readings from their textbook and additional texts provided by the instructor about Ecuador history and culture. The quality of their critical thinking is assessed with a rubric.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global

Sustainability and the natural and human worlds: When learning another language and culture, students will increase their awareness of the diversity of cultures beyond the United States and analyze similarities and differences between their own culture and others in relation to perceptions, beliefs, and behavior. The goal of language learning is not only the acquisition of communicative competence in a target language, but also the acquisition and development of intercultural competence. Learning a new language is also seen as a way to engage more effectively in the local and global communities. Students are encouraged to talk to native Spanish speakers in their local community and bring their findings to the class.

Ethical reasoning: At this early stage of language acquisition, students engage in conversations and online discussions about culturally sensitive topics, starting with the most basic forms of communication (greetings and introductions) and continuing with social attitudes toward sports and family, which are two topics covered in this course. The students intercultural reasoning is evaluated in the context of a written assignment about one of these topics and a rubric is used to assess student learning.

Collaboration skills, teamwork and value systems: Teamwork is encouraged throughout the semester through oral and written communication among students.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Students learn the difference between slang and more proper Spanish expressions. Students are presented with reliable language learning sources, and instructors highlight the difference between Spanish dialects and formality registers.

Digital Literacy: Students utilize modern learning tools, including computers, search engines, library databases, presentation software, and word processors to complete assignments. Digital literacy is built-in in this course because the textbook used, Vistas, is a virtual one, and part of the students' Supersite account. The Supersite contains online chat activities that allow virtual conversations and live video chats for communication practice outside of class. There are forums for oral assignments and group discussions. Projects that develop the four basic skills (speaking, listening, reading and writing) can be extended to the Internet by using podcasts (listening and speaking) and short blog entries or online discussions (reading and writing). Instructors assess information and digital literacy in the context of a project that includes using the Internet to create a podcast and use a rubric to assess student learning.

Information Structure: In this course students participate in oral assignments and group discussions in class. Some of these projects are later extended to the Internet by using podcasts (to practice listening and speaking skills) and occasionally short blog entries to practice reading and writing. Instructors assess information and digital literacy in the context of a project that includes using the Internet to create an introductory podcast and use a rubric to assess student learning.

Research as Inquiry: Cultural curiosity and the impulse to learn of new cultures and languages is itself an inquiry. This class is an answer to the natural curiosity about what unites us as humans as well as what makes each culture unique.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 21 2019



### Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## SP 114 Sample Assessment

Filename: SP\_114\_Sample\_Assessment.doc Size: 400.9 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000184

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on



essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Peter Steinbach
Title	Full Time Faculty
Phone	224-4000 x 50057
Email	psteinbach@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	MSE

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	MATH
Number	1340
Title	Geometry for Design
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

No

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	MATH
Number	1340
Name	Geometry for Design

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply theorems of Euclidean Geometry.

Component 1: Measure plane figures.

Component 2: Prove congruence of plane figures.

Component 3: Use similarity to solve proportions and scaling problems.

Component 4: Solve triangles with trigonometric ratios.

2. Use the construction tools of Descriptive Geometry.

Component 1: Reproduce the basic constructions.

Component 2: Draw arcs, polygons, tracery, and arches of specified kinds.

Component 3: Solve construction problems.

3. Apply the operations of Transformational Geometry.

Component 1: Transform plane figures with translation, rotation, and reflection.

Component 2: Identify transformations in context.

4. Analyze elements of Combinatorial Geometry.

Component 1: Analyze tessellations and polyhedra with their numerical codes.

Component 2: Design new tessellations.

Component 3: Build models of polyhedra.

5. Classify elements of Ornamental Geometry.

Component 1: Identify linear and planar symmetries.

Component 2: Compare symmetries in world folk designs.

Component 3: Analyze fractals.

6. Compare ideas about Visual Perception.

Component 1: Analyze archetypal symbols and logos.

Component 2: Compare cultural geometric styles and meanings.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

This course is hands-on and application oriented. Students explain their methods and solutions using the appropriate genres and mediums of mathematical terminology, notation, and communication. The course is also project based and group-activity based. Students apply mathematical concepts and gain versatile mathematical communication strategies when students write instructions for a compass-and-straightedge construction (see the attached assessment). Student assessment occurs when they choose one of a set of geometric designs, develop a compass-and-straightedge construction for it, then write out the steps of the construction, using labels for points, proper notation for lines and arcs, as well as correct mathematical vocabulary for objects and maneuvers. These written instructions should be clear to another person who is drawing the design for the first time. Students often interact to share these instructions and explain these concepts to each other to foster strategies for understanding the topic and evaluating the messages the instructions convey.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students problem set in this course when they have to find in a diagram any of the following and more:

- similar figures leading to a proportion equation
- a trigonometric ratio leading to a trig equation
- a set of three matching pairs of parts (like SAS) leading to a congruence of other parts
- relations of angles leading to the identification of unmarked angles
- orientations of objects in a design identifying a symmetry group
- combinations of polygons sharing a vertex to identify a tiling code

This above assessment will typically involve acquiring evidence about the diagram and evaluating the evidence used for identification of unknowns in a diagram. Students will be assessed for reasoning when they explain the appropriate method they have chosen and their application of the appropriate method as it is carried through to a solution.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

As this course involves more spatial reasoning and less numerical work than other math courses, the numerical or quantitative part will focus on the cultivation of multiplicative communication and thinking over additive thinking. For example, art majors' numerical needs focus primarily on problems of scaling, and this is proportional reasoning, which is multiplicative. The mind set that scales is one that solves proportions. Furthermore, students tabulate a variety of data sets, including polygon angles, combinations of angles that tile the plane, numbers of components to enter in Euler's Formula, and recursive and geometric number sequences, demonstrating students' skill acquisition of analytical and applicative quantitative methods and models.

Assessment is done with a project in which a proposed art work is first modeled in small scale. Comparison of model vs reality then uses proportion and dimensional principles to quantify the relation between linear measures, the consequentially different relation between surface areas, and the very different relations of volumes and weights and costs.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/genedassessmentplan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### Math 1340 Sample Assess

Filename: Math\_1340\_Sample\_Assess.docx Size: 20.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000255**

Sara Vigil - [savigil@luna.edu](mailto:savigil@luna.edu)

NM General Education Curriculum



Application Form

Completed - Mar 26 2019

#### Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Geno Castillo
Title	Faculty
Phone	5054545304
Email	gcastillo@luna.edu



### Submitting Institution

Name of HEI	Luna Community College
Submitting Department	STEM

### Chief Academic Officer

Name	Sharon Lalla
Email	slalla@luna.edu

### Registrar

Name	Henrietta Maestas
Email	hmaestas@luna.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	PHYS
Number	1230
Title	Algebra-based Physics 1 & Lab
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	NA
Number	NA
Title (if applicable)	NA

### New Mexico Common Course Information

Prefix	Phys
Number	1230
Name	Algebra-based Physics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate knowledge of Newton's Law of Motion and apply them to simple physical systems (e.g. transitional and rotational motion). 2. Demonstrate knowledge of the Laws of Conservation of Energy and apply it to simple mechanical systems. 3. Demonstrate knowledge of the Laws of Conservation of Momentum and apply it to simple mechanical systems. 4. Demonstrate knowledge of the Laws of Rotational Dynamics and learn how to apply it to simple mechanical systems. 5. Demonstrate knowledge of the concepts and phenomena of wave motion, oscillations, and gravity, and learn how to apply it to simple mechanical systems. 6. Demonstrate knowledge of the concepts and phenomena in the fields of heat, thermodynamics, and thermal physics, and apply them to simple mechanical systems. 7. Demonstrate the ability to translate common language descriptions into the language of physics and into physical diagrams. 8. Demonstrate the ability to interpret physical diagrams in the language of physics. 9. Demonstrate the ability to collect, evaluate, interpret, and communicate scientific information in terms of fundamental mechanical concepts. 10. Demonstrate the ability to interpret and evaluate data in terms of fundamental mathematical and statistical concepts.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

To develop critical thinking skills, students in PHYS 1230 will be engaged through in-class, homework, and laboratory exercises. Students will practice the scientific method, and engage in assignments using observation, interpretation using mathematical concepts. Students will identify and gather the data/information to address the problem, explain how to answer a specified problem, and check the validity of the solution. Students will develop the ability to express quantitative information symbolically, graphically, and in written language. Students will apply reasoning by continued characterization, identify and answer the questions of which physics concepts are occurring. Students will participate in lab and demonstrate their critical thinking skills by determining basic physical principles that can be tested with the device. Furthermore, the students will perform and analyze the results of these experiments. Students will form conclusions at the end of each lab.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning, PHYS 1230 students will solve problems related to physical world we live in. Students will be practicing the scientific method by using numerical datasets. Students will express quantitative information symbolically by using mathematical equations, graphically by drawing pictures to interpret and understand the problem, and by representing motion and vectors in two dimensional Cartesian plane. Students will apply their knowledge of physics to address and solves specific problems within physics. The communication/ representation of quantitative data will be done by tables, maps and written descriptions. Analysis of quantitative arguments will be done by evaluating the reasonability of the data collected. The application of quantitative models occurs when students use the numerical data to solve physical problems. In the energy lab, students will make observations of a ball rolling down 4 different shapes of ramps. The students will collect data of each ramp, which includes its height and length. The students will calculate the speed of each ball, as well as, its potential and kinetic energies during this experiment.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

PHYS 1230 Students work in groups, which allows them to develop their personal and social responsibility. This enables students to develop skills such as teamwork, collaboration and communication, which are used in the real world. Most topics presented in PHYS 1230 will end with a discussion of human interactions with the environment. For example, using energy concepts to formulate reasons for the using and not using of renewable energy sources. Students engage in concepts of human interaction with climate change. Students identify some causes that are affecting climate change such as hydrocarbon emissions, and work as a team to suggest on how it can be minimized.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

NA

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 25 2019



Upload Assessment

Completed - Mar 25 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Phys 1230\_LCC\_Sample\_Assessment

Filename: Phys\_1230\_LCC\_Sample\_Assessment.docx Size: 17.0 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000118

Stephen Mathewson - smathewson@cnm.edu  
NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

#### Contact Information

Name	David Chavez
Title	Full-Time Faculty
Phone	224-4000 ext. 52257
Email	dchavez287@cnm.edu

#### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

#### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

#### Registrar

Name	(No response)
Email	(No response)

#### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

#### Institutional Course Information

Prefix	PHIL
Number	1130
Title	Contemporary Moral Issues
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	PHIL
Number	1130
Name	Contemporary Moral Issues

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**



**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Understand and analyze various textual arguments on contemporary moral issues.
2. Demonstrate the ability to critically read, write, and discuss contemporary moral issues from the standpoint of a variety of ethical theories.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

**C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

- (1) In doing the attached analysis paper, students delineate a problem or question by identifying a substantive point of moral debate and framing their discussion of it in terms of competing theories within the field of applied ethics
- (2) Students identify and gather the necessary information to address the problem by (a) clearly articulating the problem of human ethical obligations to animals framed by the author in order to then (b) gather and utilize prominent theories in the field of ethics to analyze the problem, (c) locate the author's main argument on the topic, and finally (d) access previous learning and information from logic to evaluate the author's argument.
- (3) Students evaluate evidence, proposals, and arguments for credibility and probable truth by employing various analytical tools introduced throughout the semester: (a) students use the logical concepts of truth, validity, soundness, and cogency to assess and construct arguments; (b) students use assessments of the relative strengths and weaknesses of competing ethical theories to evaluate the plausibility of concrete proposals regarding the ethics of animal use.
- (4) Relatedly, students develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation by: (a) providing arguments that as far as possible conform to the logical standards (introduced in the course) validity, soundness, strength, and cogency and (b) anticipating and responding to possible objections to their proposals.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

- (1) In this course, students demonstrate intercultural reasoning and intercultural competence by: (a) explaining and analyzing different (and possibly conflicting) historical and cultural perspectives on moral value; (b) Explaining and critically evaluating the thesis of moral relativism; (c) and considering possible ways of adjudicating, in a principled fashion, between conflicting moral theories and frameworks.
- (2) Students address sustainability and the natural and human worlds by: learning and then applying competing theories from the field of ethics to problems concerning, among other things, the environment, anthropocentric ethics, the ethics of animal use, our ethical commitment to future generations, and direct-obligation views vis-à-vis the environment.
- (3) In the attached paper project, students demonstrate ethical reasoning by: (a) articulating and evaluating how well prominent ethical theories comparatively perform vis-à-vis intuitive questions about the extent of human ethical obligations to non-human animals; (b) applying the tools of logic to objectively evaluate a prominent argument for animal rights; and (c) developing their own conclusions and, to the extent possible, sound arguments on that topic.
- (4) In this paper, students demonstrate awareness civic discourse, including problems that hinder progress by, among other things: (a) explaining diverse positions on the position of animals in the hierarchy and nature of value, (b) demonstrating the need for reasoned, principled arguments in civic discourse, and (c) applying the tools of logic construct reasoned, publicly shareable arguments and conclusions on ethical matters.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

(1) In this paper (see attached) students recognize the authority and value of information by: (a) accessing scholarly works to inform their writing, (b) producing a substantive document in which they must properly credit and cite all external sources of ideas, explanations, and quotations (a strict non-plagiarism policy is explained and enforced); and (c) students apply an appropriate citation style.

(2) Students understand, communicate, create, and design in digital environments by: (a) constructing digital documents following appropriate styles and formatting; (b) communicate with instructor electronically following proper conventions; and (c) utilize Blackboard to access various course materials about ethical concerns.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHIL 1130, Critical Response Paper

Filename: PHIL\_1130\_Critical\_Response\_Paper.pdf Size: 49.4 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000167

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17**,

**2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

### Institutional Course Information

Prefix	SPAN
Number	101
Title	Beginning Spanish I
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	SPAN
Number	1110
Name	Spanish I

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students can communicate on very familiar topics using a variety of words and phrases that they have practiced and memorized.
2. Students can present information about themselves and some other very familiar topics using a variety of words, phrases, and memorized expressions.
3. Students can write short messages and notes on familiar topics related to everyday life.
4. Students can often understand words, phrases, and simple sentences related to everyday life.
5. Students can recognize pieces of information and some- times understand the main topic of what is being said.
6. Students can understand familiar words, phrases, and sentences within short and simple texts related to everyday life.
7. Students can sometimes understand the main idea of what they have read.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will analyze and critically interpret significant and primary texts and/or work of art (this includes fine art, literature, music, theatre, and film) across the semester. Students will also compare art forms, modes of thought and expression, and processes across a range of historical periods and or structures while recognizing and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives. Students will draw on historical and/or cultural perspectives to evaluate any or all of the following: contemporary modes of expression, and contemporary thought. Students will research and analyze historical events, folklore, individuals and countries that are symbolic to the Hispanic culture and its importance to the past, present and future.

***Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will identify diversity of the human and social experiences within the Hispanic culture as well as the comparative human and social experiences of other cultures during the semester. Students will compare the diverse cultural perspectives to identify the development of language, economy, society, government, religion, and culture within peoples and the impact on their developing societies. All students' skills and development will be evaluated by taking a comprehensive and objective final exam. Final exam included the basics of the Spanish Language that students learned throughout the semester. Exam questions will come from lectures, quizzes, written, and visual assignments as well as cultural knowledge and understanding of materials which were presented and gained throughout the semester including movies, readings, and specific subject research.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

During the semester, students will be exposed to and required to use a range of digital platforms and media sources, including word processing software, YouTube video clips, subject related websites, online texts, and a host of other digital venues to reinforce visually the contextual basis of ideas, events, language and historical relevance.

Students will also be able to practice their skills and check cultural comprehension through various online assessment tools, such as Kahoot, Quizziz, and/or Jeopardy. Students will learn and apply basic recording skills using a variety of functional voice capturing tools of their choosing as well as utilize the voice recordings that are provided via Canvas, mp3, mp4, and/or movie makers. These tools will be implemented in this course through various means including the face to face classroom environment and through the Canvas Digital Learning platform and its many digital capabilities. Students will learn basic computer skills, technological steps, and platform skills to access a course shell within Canvas in all classes to access the above mentioned digital course materials. Also within the Canvas course shell, students will utilize exams, practice quizzes, written assignments, study guides, and student-driven threaded discussion questions that allow interaction with fellow classmates and the instructor.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## SPAN 101-SPAN 1110 Assessment

Filename: SPAN\_101-SPAN\_1110\_Assessment.pdf Size: 135.7 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## SPAN 101-SPAN 1110 Syllabus

Filename: SPAN\_101-SPAN\_1110\_Syllabus.pdf Size: 167.4 kB

## Application: 0000000152

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
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### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	EN
Number	213C
Title	American Literature I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	ENGL
Number	2610
Name	American Literature I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Recognize the traditions of American literature and their connection to issues of culture, race, class, and gender.
2. Demonstrate familiarity with a variety of major works by American authors.
3. Explore the various influences and sources of American literature.
4. Apply effective analytic and interpretive strategies to American literary works using academic conventions of citation and style.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Instructors provide instruction on critical thinking skills related to reading, writing, and research throughout the course. Students analyze readings, including fiction, poetry, plays, and nonfiction. With guidance from the instructor, learners engage in dialogue to interpret the readings while also discussing the cultural and historical significance of the texts.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine. Students use secondary sources as evidence in analyzing primary sources (works of literature) in a research paper.

Reasoning/Conclusion: Students use support and evidence from primary and secondary sources to defend a thesis statement while avoiding common logical fallacies. Students also practice critical analysis by commenting on each other's rough drafts for essays and the research paper.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students can identify and analyze personal and social justice

issues in a variety of texts, including a diversity of social and cultural contexts.

Ethical reasoning: Students analyze texts for ethical thought and action, including individual actions of characters and separating individual character thought and action from the commentary and thematic implications offered by the text as a whole. Students discuss literature as a social activity that reflects, promotes, and critiques values while comparing and contrasting these perspectives with belief systems currently operating in the world.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact

and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments. Instructors provide students with local opportunities to interact and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments.

Civic discourse, civic knowledge and engagement – local and global: Students analyze works of literature to

determine the cultural, racial, economic, or political factors present in the work. They diplomatically engage in

dialogue concerning these topics, recognizing the factors that shape literary production as well as analysis of

literature itself.



**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The research paper in this course is the centerpiece assignment and is worth a minimum of 30% in all sections. Instructors present students with lessons on finding, evaluating, and citing sources in analytical and argumentative writing. Avoiding plagiarism through ethical use of sources and citation is a key topic.

Instructors require the use of professional sources from reputable publishers and peer reviewed journals. Student work is evaluated for ethical use of sources with Turnitin. Instructors offer guidance on interpreting Turnitin reports to help students responsibly and ethically cite sources.

Digital Literacy: Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers.

Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the research paper.

Information Structure: Students practice paraphrasing and summarizing information from professional secondary sources. Students integrate multiple primary and secondary sources into a research paper structured around a developed thesis statement and topic sentences in MLA format.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis of the literary work in question.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### EN Assessment

Filename: EN\_Assessment.doc Size: 737.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000017**

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



Application Form

Completed - Mar 18 2019

#### Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins
Title	Division Chair
Phone	5757694909
Email	don.scroggins@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	MATH

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	MATH
Number	113
Title	Math for General education
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	MATH
Number	1130
Name	Survey of Mathematics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Construct and analyze graphs and/or data sets.
  - a. Gather and organize information.
  - b. Understand the purpose and use of various graphical representations such as tables, line graphs, tilings, networks, bar graphs, etc.
  - c. Interpret results through graphs, lists, tables, sequences, etc.
  - d. Draw conclusions from data or various graphical representations.
2. Use and solve various kinds of equations.
  - a. Understand the purpose of and use appropriate formulas within a mathematical application.
  - b. Solve equations within a mathematical application.
  - c. Check answers to problems and determine the reasonableness of results.
3. Understand and write mathematical explanations using appropriate definitions and symbols.
  - a. Translate mathematical information into symbolic form.
  - b. Define mathematical concepts in the student's own words.
  - c. Use basic mathematical skills to solve problems.
4. Demonstrate problem-solving skills within the context of mathematical applications.
  - a. Show an understanding of a mathematical application both orally and in writing.
  - b. Choose an effective strategy to solve a problem.
  - c. Gather and organize relevant information for a given application.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Throughout the semester in this course, students communicate via multiple genres and media. Students participate in written or oral class discussions in which they are asked to evaluate content from a printed article, video or social media relating to logical arguments. Students' evaluations include but are not limited to the use of a step-by-step strategy for initial examination, recognizing and naming of occurring fallacies and proposal of alternative arguments. Students are assigned a major project in which students research a topic of their choosing and present it to the class in a method of their choice which may include demonstration, PowerPoint presentation, video or classroom activity. In the online class setting, students post their research in the form of a discussion and evaluate the posts of their peers. In these projects, students must illustrate their capability of correct use of mathematical concepts. This course assesses students using formative assessments such as homework and quizzes which provide a variety of questions and situations where students consider statements or problems and appraise their reasonableness, then explain their evaluation.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Across the semester, problem settings that students encounter include but are not limited to personal budgeting, savings plans, unit conversion, collections of data for statistical purposes, geometry, and the golden ratio. In each context, students read the information and show comprehension by identifying important clues for solving the problem. They extract stated evidence required to solve the problem as well as determine any unstated (but assumed) information. Students then evaluate the reasonableness of the answer and its appropriateness in addressing the original question. Assessment of critical thinking skills is accomplished with formal exams and discussion forums.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Throughout this course, students represent quantitative information through formulas, tables and graphs. Formulas may include but are not limited to amortization of loans, sample statistics, the golden ratio, area and volume, CPI and absolute and relative change.

Students organize categorical and numerical data into frequency tables and produce appropriate graphs which may include but are not limited to histogram, bar charts, pie charts, line charts, scatterplots or time-series graph. They analyze given graphs for trends, major differences between data in multi-bar and multi-line graphs, and important statistical characteristics such as variation and modality. Additionally, students analyze graphics in order to identify any misleading or false presentation and articulate what sort of problems may occur as a result.

Students work problems in which they must make comparison of two or three options (such as keeping an old car or buying a new one, weighing the cost of college versus working during that time frame, finding the best bargain for a particular item, etc.). Formal written exams, homework problems, and quizzes are used for the assessment of quantitative reasoning skills.



#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 5 2019



#### Upload Assessment

Completed - Mar 5 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### MATH 113 sample assessments

Filename: MATH\_113\_sample\_assessments.zip Size: 254.1 kB



#### Upload Rubric

Completed - Mar 5 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### MATH 113 Sample syllabi

Filename: MATH\_113\_Sample\_syllabi.zip Size: 69.2 kB

### Application: 0000000039

Yang yang - yyang36@gmail.com

NM General Education Curriculum



#### Application Form

Completed - Mar 20 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Yang Yang
Title	College Physics Associate Professor
Phone	5756248481
Email	yang@nmml.edu

### Submitting Institution

Name of HEI	New Mexico Military Institute
Submitting Department	Science

### Chief Academic Officer

Name	Douglas J. Murray
Email	dmurray@nmmi.edu

### Registrar

Name	Chris Wright
Email	Wright@NMMI.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PHYS
Number	1230
Title	General Physics I
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	MATH
Number	1220
Title (if applicable)	College Algebra

## New Mexico Common Course Information

Prefix	PHYS
Number	1230
Name	General Physics I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

A. Substantive Objectives: At the conclusion of this course, you will be able to

1. Demonstrate an understanding of the physical principles, such as Newtonian laws of mechanics, Newton's theory of gravitation, and fluid dynamics.
2. Know the symbol for the physical quantities covered, and know the physical quantity for which each symbol stands;
3. Demonstrate an improved insight into the mechanical phenomena of the physical world, and have the knowledge of the technical terms used in the discussion of the phenomena studied.
4. Recognize the role that mechanics plays in many facts of our life and the responsibility of those who understand physics to contribute appropriately to their communities;

5. Using the scientific method to conduct an experiment with modern laboratory equipment.

B. Skill Objectives: Upon completion of this course you will be able to

1. Apply principles of Newtonian mechanics to predict or calculate the translational motion of particles in one or higher dimensions using algebra.
2. Apply the principles of Newtonian mechanics to predict or calculate the rotational motions of particles using algebra.
3. Apply Newton's gravitational theory to circular motions and understand planetary motions or subatomic particle motions.
4. Apply work and energy principle to understand the energy transfer and solve the problem with kinetic energy and potential energy.
5. Apply Archimedes' and Bernoulli's principle to understand fluid dynamics based on Newtonian mechanics.
6. Apply a systematic approach to problem-solving by
  - a) Identify knowns and unknowns and set up strategies to solve the problem.
  - b) Derive algebraic solutions using appropriate symbols for physical terms.
7. Solve problems involving reading or constructing a graph.
8. Applying mathematics of vectors to principles of physics, such as vector addition, dot product and cross product of vectors.
9. Use Vernier Logger Pro units, LabQuests, computers, and/or the internet to gather, compile, and present information gathered experimentally;
10. Use other laboratory equipment to experimentally verify mechanics concepts.
11. Complete the laboratory report that presents experimental data in a data table and includes an analysis of the experimental results. Complete the pre and post-lab questions.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

A. Substantive Objectives: At the conclusion of this course, you will be able to

1. Demonstrate an understanding of the physical principles, such as Newtonian laws of mechanics, Newton's theory of gravitation, and fluid dynamics.
2. Know the symbol for the physical quantities covered, and know the physical quantity for which each symbol stands;
3. Demonstrate an improved insight into the mechanical phenomena of the physical world, and have the knowledge of the technical terms used in the discussion of the phenomena studied.

4. Recognize the role that mechanics plays in many facts of our life and the responsibility of those who understand physics to contribute appropriately to their communities;

5. Using the scientific method to conduct an experiment with modern laboratory equipment.

B. Skill Objectives: Upon completion of this course you will be able to

1. Apply principles of Newtonian mechanics to predict or calculate the translational motion of particles in one or higher dimensions using algebra.

2. Apply the principles of Newtonian mechanics to predict or calculate the rotational motions of particles using algebra.

3. Apply Newton's gravitational theory to circular motions and understand planetary motions or subatomic particle motions.

4. Apply work and energy principle to understand the energy transfer and solve the problem with kinetic energy and potential energy.

5. Apply Archimedes' and Bernoulli's principle to understand fluid dynamics based on Newtonian mechanics.

6. Apply a systematic approach to problem-solving by

a) Identify knowns and unknowns and set up strategies to solve the problem.

b) Derive algebraic solutions using appropriate symbols for physical terms.

7. Solve problems involving reading or constructing a graph.

8. Applying mathematics of vectors to principles of physics, such as vector addition, dot product and cross product of vectors.

9. Use Vernier Logger Pro units, LabQuests, computers, and/or the internet to gather, compile, and present information gathered experimentally;

10. Use other laboratory equipment to experimentally verify mechanics concepts.

11. Complete the laboratory report that presents experimental data in a data table and includes an analysis of the experimental results. Complete the pre and post-lab questions.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Lecture, recitation exercises problems, quiz, exams, and associate labs will be given during the semester to develop critical thinking skills.

Problem Setting: Exercise problems, homework will be given after each lecture and students need to identify the components of the problem, find a method to solve the problem and draw a conclusion to the problem.

Evidence Acquisition: Students need to gather the evidence/knowledge learned in the past to solve the problem or answer a question. During the lab section, students should be able to gather information base on the physical principle and available laboratory equipment to support their conclusion.

Evidence Evaluation: Once the student solves the problem, they need to check the validity of the answer, solution or conclusion that obeys the physical laws. During the laboratory section, if a difference is made based on their conclusion, they should be able to find the uncertainty and find the factors that contribute to the discrepancy.

Reasoning/Conclusion: After the conclusion is drawn, the students should be able to validate their conclusion, for example, whether the application is doable base on other factors according to physics laws. During the laboratory section, students should have plans on how to improve the experimental method to get more accurate results.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Lectures, exercise questions, quiz, exams, and associated laboratory experiments will be given during the semester to develop this outcome.

Communication/Representation of Quantitative Information: By giving numbers to physical quantities, students should be able to derive/calculate the values of other physics quantities. For example, if a batter wants to hit the baseball back with the same amount of velocity within a certain amount of time, students should be able to calculate the impulse and forces needed to achieve this action by given the initial velocity, the mass of the baseball and time duration. During the laboratory section, students should be able to use modern equipment to gather quantitative information for certain physics quantity. Analysis of Quantitative Arguments: Students should gather and interpret the information given in the question or raised in real life, and reasoning through by providing physical evidence to support the analysis. For example, in order to find the impulse and force the batter needed, the student should analysis the velocity and time, then find appropriate physics laws to solve the problem. During the laboratory section, students should analyze the data acquired using the equipment to derive or support their conclusion.

Application of Quantitative Models: Students should apply appropriate quantitative models to solve problems using quantitative information gathered with proper analysis and reasoning. For example, in order to find the impulse and force the batter needed, the student should use the relationship between impulse and momentum to calculate the answer. During the laboratory section, students should use appropriate physical models to draw conclusions using corresponding quantitative information acquired with scientific reasoning.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Collaboration skills, teamwork and value systems: Students will team up during the laboratory section to complete the task using physics concepts. During the two and half hours section, they should collaborate to finish collecting essential experimental data. After collecting the data, students should be able using appropriate physics models to analyze the experimental data. During the collaboration, they should team up to contribute their thought and time to draw a solid conclusion using the scientific method. Also, projects will be given during the semester which they will collaborate and team up to research on certain topic or projects. During the lecture section, they will also team up to work on problems or discuss answers to relevant social questions.

Sustainability and the natural and human worlds: Students should use the appropriate physics laws to understand the consequence of certain human action or understand the rules set up by human society to regulate the behavior. For example, by understanding Newton's three laws, they should know the importance of wearing a seat belt for both the driver and passengers. Also, by understanding circular motion and friction coefficient, they should drive slowly when making turns on the road and pay extra attention when it is raining or snowing.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 11 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Supporting documents

Filename: Supporting\_documents.pdf Size: 483.1 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000203

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



Application Form

Completed - Mar 21 2019

## Application Form

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility

5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Julie Mason
Title	ASL Faculty
Phone	224-4000 ext. 53394
Email	jmason15@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	SIGN
Number	1110
Title	American Sign Language I
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

No

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	SIGN
Number	1110
Name	American Sign Language I

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Engage in basic conversations using ASL, such as introducing oneself, exchanging personal information, and talking about one's surroundings.
2. Demonstrate the use of grammatical structures, including spatial referencing, use of classifiers, role shifting, ASL syntax, and non-manual signals (NMS).
3. Demonstrate clear sign production using an understanding of sign parameters: handshapes, movement, location, palm orientation, and NMS in targeted lexicon.
4. Demonstrate the use of basic ASL vocabulary and expressions necessary for conversations about real-life situations.
5. Evaluate and provide feedback concerning peers' and one's own uses of ASL.
6. Develop culturally-appropriate behaviors and conversation strategies within a variety of contexts for interacting with people who are Deaf.
7. Demonstrate effective use of comprehension and expressive ASL skills through narrative and/or storytelling activities.
8. Describe issues of the American Deaf community and Culture.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Throughout this course, students will use their emerging knowledge about ASL as they identify vocabulary and grammar structures, such as spatial referencing, classifiers, and non-manual signals through repetition and eventually, incorporation. In addition, an immersive approach also allows students to problem set as they determine how to communicate in either the target language or alternative, culturally-appropriate behaviors and methods of communication, such as gesturing, writing, fingerspelling, etc. Students will apply their awareness in various situations presented to them through a theoretical cultural lens by writing summaries assessing their experiences when attending a minimum of two Deaf events or viewing a minimum of two Deaf/ASL-related films. Students will acquire evidence about deaf communication as they practice in the target language with native and fluent users of American Sign Language, as well as evaluating different strategies for the purpose of achieving successful communication. In these summaries, students evaluate the communication they have experienced and reason about the use of ASL or other culturally appropriate methods of communication using supporting evidence gathered for the assignment. Students' critical thinking will be assessed using the attached rubric.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

In this course, students are exposed to a wide variety of demographics of native/fluent users of American Sign Language. ASL is unique in that the majority of its users learn the language from their peers, rather than their parents. Students work to understand the fundamental cultural and political structures of this community demographic, in order to ensure that they are learning and using the target language (ASL) in appropriate, culturally acceptable ways, which leads to students gaining intercultural reasoning and competence. To assist students in differentiating between the many different perspectives making up this linguistic community, students are asked to conduct research on a course-related topic of their choosing (discussing issues of the American Deaf community/culture) and write a short research paper (or alternatively, present their findings to the class). In their research process, students are assessed as they ethically gather and evaluate evidence in order to support their topic. They are also encouraged to evaluate their own personal assumptions, reasoning, and conclusions by answering questions from their classmates and/or the instructor about their research to foster collaborative skills. Student work is assessed using a grading rubric (see the attached) gauging their ability reason ethically and work collaboratively, which is essential for ASL communication.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Throughout this course, emphasis is placed on supporting students' development in information and digital literacy. As the target language (American Sign Language) is a visual one, so students are required to produce and submit their language exercises in a digital video format. This process allows students to learn how to share and communicate appropriate information in formats commonly used by the ASL linguistic and cultural communities. The first video assignment is designed specifically to allow students to troubleshoot any problems that may occur in their attempts to understand how to use their digital devices to create videos in order to communicate in American Sign Language. Students also recognize the authority and value of the information in the language exercises in their textbook DVDs, which model appropriate language. Students will also use this resource ethically in a manner determined by the instructor and grading rubric. For example, students may use language models to practice their language exercises but may not directly copy the signing models while recording their own video assignments. Video assignments alternate between textbook/DVD exercises and spontaneous language creation in narrative/storytelling activities which are often digitally recorded and transmitted via a LMS, which allows students to display their emerging acquisition of digital literary skills. These video assignments are assessed by the instructor and a grading rubric which addresses appropriate information and digital guidelines, language development, and language proficiency.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment



The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### SIGN 1110 Research\_Assessment

Filename: SIGN\_1110\_Research\_Assessment.docx Size: 368.8 kB



### Upload Rubric

Completed - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### SIGN 1110 ResearchPaper\_Rubric

Filename: SIGN\_1110\_ResearchPaper\_Rubric.docx Size: 11.9 kB

## Application: 0000000090

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning

3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Felecia Caton-Garcia
Title	Instructor of American Studies
Phone	505.224.3000
Email	fcatongarcia@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	CCST
Number	1130
Title	Introduction to Chicana and Chicano Studies
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	CCST
Number	2110
Name	Introduction to Chicana and Chicano Studies

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. apply various transdisciplinary perspectives and processes to understand humanist expressions through a variety of creative productions.
2. assess and apply social, historical, economic and cultural perspectives as they impact diverse populations over a period of time.
3. explain the ways in which narratives help people understand one another more clearly and profoundly across ethnic and cultural groups.
4. design presentations that foster and increase a full understanding of a subject in order to promote change in the listeners' attitudes, values, beliefs, or behaviors.
5. apply qualitative and numerical data to explain diverse human actions in an everyday context of life.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will engage with a variety of genre and media including scholarly articles, online sources, documentaries, feature films, and additional multi-modal instructional materials. Weekly, students will discuss texts, working collaboratively to analyze the material and compose thoughtful responses. These assignments require students to communicate orally and in writing. Larger scale assignments ask students to evaluate and produce arguments when they present a thorough and extended composition about how cultural studies theories and methods apply to lived experience and cultural artifacts. For example, after viewing the iconic film *Zoot Suit*, students may be assessed for their strategies of understanding and evaluation of messages when they respond to the ambiguity of the film's ending as it relates to Chicanx history during the "Zoot Suit Riots." Communication within the group will result in a written response to the film that demonstrates a thorough understanding of the historical context, the use of a genre (in this case film) to explore an historical event, and the ways in which such texts contribute to a better understanding of contemporary issues within the United States.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Through reading and discussing texts, students will problem set when they apply constructivist lenses to identity and experience in Chicanx history and culture. Weekly discussions and/or written assignments ask students to critically examine texts, such as Howard Zinn’s *We Take Nothing by Conquest, Thank God*” (see attached), to determine authorship, genre, purpose, and context, which will not only allow students to acquire evidence but also evaluate evidence. Larger scale assignments ask students to employ research methods to acquire information on a topic or topics within the Chicanx culture, such as the 1948 Los Gatos DC-3 crash in California, then to analyze and synthesize that information to create a reasoned argument. Students will be assessed on the quality of the research (resources have been evaluated for credibility and relevance), the organization of material, the logical use of evidence to support a clear claim, and the presentation of the research in a way that accurately assesses and responds to audience and context.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The texts used in the course address a diverse array of cultural and social issues in order not only to introduce students to the complexity of Chicanx culture historically and contemporarily but also to help students gain intercultural reasoning and intercultural competence. For example, in the attached assignment about Howard Zinn’s text, students work collaboratively in groups to explore the origins and consequences of the Mexican-American War. Students gain intercultural perspectives on this historic event and examine the ways that historical narratives shape contemporary biases and discrimination. The critical examination of “borders” as a historical construct, for example as texts from the Journal of Borderland Studies illustrate, encourages students to ethically reason about contemporary debates focusing on borders and immigration through an intercultural and social justice lens. Students will be assessed for intercultural reasoning and intercultural competence as they develop a broader understanding of the shifting borders of nation, the dynamics of colonization and subjugation, and the national myths that determine the meaning of citizenship. They also gain competence in understanding national local and global issues and debates regarding nation-states and effect globalization. Additionally, students can examine the roles that “ordinary” people played in patterns of conflict and resistance through engagement in civic discourse and action.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 18 2019



## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### CCST 1150 Zinn Small Group Assessment

Filename: CCST\_1150\_Zinn\_Small\_Group\_Assessment.docx Size: 22.7 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000249

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



## Application Form

Completed - Apr 2 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning



3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins/Joy Newton
Title	Division Chair/Full time Professor
Phone	5757694909/5757694931
Email	don.scroggins@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

**Institutional Course Information**

Prefix	BIOL
Number	113
Title	Biology for General Education and Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	n/a
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	BIOL
Number	1110C
Name	General Biology Lecture and Lab

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Student Learning Outcomes: (Lecture)

1. Explain the value of the scientific method as a means for understanding the natural world and for formulating testable predictions.
2. Explain how chemical and physical principles apply to biological processes at the cellular level.
3. Understand basic concepts of cell biology.
4. Understand that all organisms share properties of life as a consequence of their common ancestry.
5. Understand fundamental processes of molecular biology.
6. Understand the mechanisms of evolution, including natural selection, genetic drift, mutations, random mating, and gene flow.
7. Understand the criteria for species status and the mechanisms by which new species arise.
8. Understand methods for inferring phylogenetic relationships and the basis for biological classification.
9. Recognize the value of biological diversity (e.g., bacteria, unicellular eukaryotes, fungi, plants, and animals), conservation of species, and the complexity of ecosystems.
10. Explain the importance of the scientific method for addressing important contemporary biological issues.

Student Learning Outcomes: (Laboratory)

1. Employ critical thinking skills to judge the validity of information from a scientific perspective.
2. Apply the scientific method to formulate questions and develop testable hypotheses.
3. Analyze information/data and draw conclusions.
4. Operate laboratory equipment correctly and safely to collect relevant and quality data.
5. Utilize mathematical techniques to evaluate and solve scientific problems.
6. Recognize biodiversity in different ecological habitats and communities of organisms.
7. Communicate effectively about scientific ideas and topics.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem setting across the semester is the scientific method as it applies to General Biology. Students learn scientific inquiry using the scientific method. Their lab results and lab reports completed during and after experimentation provide assessment opportunities. Students acquire evidence for biological processes through scientific experimentation in a lab setting. Students evaluate the results of scientific research and acquisition of results from experiments conducted throughout the course and form reasonable conclusions that answer the hypothesis. Assessment of critical thinking skills in the analysis and interpretation of results is accomplished through exams and lab reports. Students develop reasoning skills through interpretation of results and application of scientific knowledge to unknown biological situations that are taught weekly through discussion. Reasoning and conclusion skills will be assessed through class and lab assignments and formal course exams. Critical thinking and reasoning skills will be modeled and practiced weekly through discussion and analysis of course materials and laboratory exercises.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students learn communication and representation of quantitative information through course discussions of data and collection of data during experiments that occur throughout the semester. Students will be assessed on the presentation of data in lab reports and formal course exams. Students will learn how to analyze scientific data and results of experiments and the practical understanding and implications of the results. Students will be assessed on their ability to analyze quantitative information by answering questions based on a sample data set or data they collected as part of a lab exercise. Students will apply quantitative models by experiments in the labs. The assessment of the analysis of quantitative arguments and the application of quantitative models will be from written lab reports where students analyze results and support their conclusions.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Across the semester in this course, students examine human culture in the context of biology, the impacts of humans on life systems, the environment, and human biology and health. Students learn ethical reasoning via discussion and application of research questions including but not limited to the environment and human health. Students will discuss the evolution of life, including the human species, how humans fit into the ecology of biology, and the implications of humans as drivers of environmental and biological change. Furthermore, students develop collaboration skills as they work in groups during lab exercises learning teamwork and values. Through discussion and models, students learn civic discourse, knowledge, and engagement skills for both local and global application. Personal and social responsibility skills are assessed using discussion forums, lab reports, quizzes and formal exams.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Apr 2 2019



Upload Assessment

Completed - Apr 2 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Sample assessments BIOL 113

Filename: Sample\_assessments\_BIOL\_113.zip Size: 1.3 MB



Upload Rubric

Completed - Apr 2 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

BIOL 113 Syllabus Kuykendall Fall 2018 (2)

Filename: BIOL\_113\_Syllabus\_Kuykendall\_Fall\_2018\_2.docx Size: 42.1 kB

**Application: 0000000161**

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



Application Form

Completed - Mar 20 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	EN
Number	213D
Title	World Literature I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No



## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2650
Name	World Literature I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Identify and comprehend key authors and literary works from ancient periods to the Enlightenment.
2. Understand each text's historical and cultural context.
3. Identify and analyze a variety of literary forms, including poetry, plays, and philosophical and religious texts.
4. Compare works from different cultures and historical periods examining genre, style, and content or theme.
5. Analyze how literary works reflect historical, national, cultural, and ethnic differences.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Instructors provide instruction on critical thinking skills related to reading, writing, and research throughout the course. Students analyze readings, including fiction, poetry, plays, and nonfiction. With guidance from the instructor, learners engage in dialogue to interpret the readings while also discussing the cultural and historical significance of the texts.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine. Students use secondary sources as evidence in analyzing primary sources (works of literature) in a research paper.

Reasoning/Conclusion: Students use support and evidence from primary and secondary sources to defend a thesis statement while avoiding common logical fallacies. Students also practice critical analysis by commenting on each other's rough drafts for essays and the research paper.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students can identify and analyze personal and social justice issues in a variety of texts, including a diversity of social and cultural contexts.

Ethical reasoning: Students analyze texts for ethical thought and action, including individual actions of characters and separating individual character thought and action from the commentary and thematic implications offered by the text as a whole. Students discuss literature as a social activity that reflects, promotes, and critiques values while comparing and contrasting these perspectives with belief systems currently operating in the world.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact

and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments. Instructors provide students with local opportunities to interact and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The research paper in this course is the centerpiece assignment and is worth a minimum of 30% in all sections. Instructors present students with lessons on finding, evaluating, and citing sources in analytical and argumentative writing. Avoiding plagiarism through ethical use of sources and citation is a key topic.

Instructors require the use of professional sources from reputable publishers and peer reviewed journals. Student work is evaluated for ethical use of sources with Turnitin. Instructors offer guidance on interpreting Turnitin reports to help students responsibly and ethically cite sources.

Digital Literacy: Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers.

Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the research paper.

Information Structure: Students practice paraphrasing and summarizing information from professional secondary sources. Students integrate multiple primary and secondary sources into a research paper structured around a developed thesis statement and topic sentences in MLA format.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis of the literary work in question.

## D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

### Date

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### EN Assessment

Filename: EN\_Assessment\_Jhrf4rc.doc Size: 737.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000114**

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



Application Form

Completed - Mar 19 2019

## Application Form

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## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Dean of Instruction

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	MTH
Number	123
Title	Trigonometry
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	MATH
Number	1230
Name	Trigonometry

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes



**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will be able to define and evaluate the trigonometric functions as functions of angle in both degree and radian measure using the definitions in terms of  $x$ ,  $y$ , and  $r$ ; as the ratio of sides of a right triangle; using the unit circle; using reference angles, commonly used ( $0^\circ$ ,  $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ ,  $90^\circ$ ) angles and using a calculator. 2. Students will be able to solve right triangles. They will be able to draw a sketch in an applied problem when necessary. 3. Students will be able to solve non-right triangles using the law of sines and the law of cosines. 4. Students will be able to prove trigonometric identities and apply addition and subtraction, double-angle, half-angle and power reduction formulas. 5. Students will be able to graph the six trigonometric functions, their transformations and their inverses. 6. Students will be able to use algebraic methods, including the use of identities and inverses, to solve trigonometric equations and demonstrate connections to graphical and numerical representations of the solutions. 7. Students will be able to add and subtract vectors in two dimensions. They will be able to use the dot product to project one vector onto another and to determine the angle between two vectors. They will be able to solve a variety of word problems using vectors. 8. Students will be able to work with polar coordinates; this includes graphing in polar coordinates and transforming an equation with polar coordinates into one with rectangular coordinates, and vice versa. 9. Students will be able to work with the trigonometric form of complex numbers, including using De Moivre's formula.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of communication. 200 – 300 words.*

In this class, students develop communication skills through a range of listening, speaking, reading, and writing activities. They demonstrate appropriate listening skills through cooperative learning activities in one-on-one and small and large group settings. They develop oral communication skills by presenting information singly and in groups. They also prepare a variety of written documents, including word-processed lab reports and presentations of graphs using TI Connectivity Kit software and Microsoft Excel. On tests, quizzes, and the final exam, students produce short answers and essays in complete sentences and well-written paragraphs or face penalties. They are expected to show all calculations and explain how they arrived at their answers.

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Students develop critical thinking skills by successfully completing laboratory activities, projects, quizzes, tests, the final exam, and the final capstone activity. In these activities, students employ processes for analyzing and interpreting data, identifying problems and potential causes, designing solutions using basic research, validating results, and revising strategies as called for by data. When tests, quizzes, and other assessments are returned to the students, they are expected to engage in error analysis to minimize the probability of future errors.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students apply mathematical skills that are appropriate to their program of study (e.g., Biology and Life Sciences, Business, Chemistry, Physics, Consumer Economics, and Construction). They analyze and solve mathematical problems taken from the workplace and everyday life. They solve for right angles, and solve for non-right angles using sine and cosine. They prove trigonometric identities, and graph trigonometric functions. They add and subtract vectors, and use dot products to determine angles between vectors. They work with polar coordinates. And, they work with trigonometric form of complex numbers

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

MTH123

Filename: MTH123.sample-assessment.docx Size: 22.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000059

Charity Schwalm - schwalm@nmml.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 14 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Charity Schwalm
Title	Associate Professor of Mathematics
Phone	5756248134
Email	schwalm@nmmi.edu

### Submitting Institution

Name of HEI	New Mexico Military Institute
Submitting Department	Mathematics

### Chief Academic Officer

Name	Douglas Murray
Email	dmurray@nmmi.edu

### Registrar

Name	Chris Wright
Email	Wright@nmmi.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	MATH
Number	1313
Title	Introduction to Statistics
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	(No response)
Number	(No response)
Name	(No response)

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the general concepts of statistics.

- a. Explain and evaluate statistics used in the real world (from a news article, research project, etc.).
- b. Use statistical vocabulary appropriately.
- c. Distinguish between descriptive and inferential statistics.
- d. Distinguish between qualitative and quantitative data.
- e. Distinguish between populations and samples, and parameters and statistics.
- f. Give examples of independent and dependent variables.

2. Presentation and description of data.

- a. Present data graphically using histograms, frequency curves and other statistical graphs.
- b. Interpret graphs of data, including histograms and shapes of distributions.

3. Summarize data using measures of central tendency and variation.

- a. Calculate and interpret the mean, median, and mode to describe data.
- b. Calculate and interpret range, variance, and standard deviation to describe data.

4. Present the concepts of probability.

- a. Interpret basic probabilities.
- b. Calculate probabilities using compound probability rules and the binomial distribution.
- c. Calculate probabilities using the standard normal distribution and relate them to areas under the curve.
- d. Determine if the binomial distribution can be approximated with the normal distribution.
- e. Describe the relationship between the sampling distribution and the population distribution.
- f. Use the central limit theorem to approximate the probability distribution and calculate probabilities.

5. Compute point and interval estimates.

- a. Determine the confidence interval for a parameter.
- b. Interpret the confidence level and margin of error.
- c. Determine whether a statistical technique is appropriate under stated conditions.

6. Perform hypothesis tests.

- a. Determine whether a statistical test is appropriate under stated conditions.
  - b. Identify null and alternative hypothesis.
  - c. Perform and interpret statistical tests (e.g. z-test, t-test, one-tailed and two-tailed, one-sample, two-sample) and determine whether data is statistically significant.
  - d. State the conclusion of a hypothesis test.
  - e. Interpret a p-value as compared to a significance level.
  - f. Explain why a test can lead us to reject a null hypothesis, not accept one.
  - g. Distinguish between Type I and Type II errors.
7. Analyze data using regression and correlation.
- a. Explain the difference between correlation and causation.
  - b. Construct and interpret scatter plots.
  - c. Calculate and interpret the linear correlation coefficient.
  - d. Determine and use the equation of a least-squares regression line between two variables to make predictions.
  - e. Interpret the meaning of the coefficient of determination.
8. Optional topics.
- a. Inter-quartile range, box-plots
  - b. Combinations and permutations.
  - c. The Poisson distribution.
  - d. Analysis of variance.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Upon graduation from NMML, a cadet who has completed coursework in the field of mathematics will be able to:

- 1. Demonstrate mathematical knowledge and skills.
- 2. Demonstrate mathematical models to solve problems in a variety of contexts.
- 3. Employ current technology for individualized learning and problem solving and the preparation of assignments.
- 4. Exhibit the learning skills necessary to succeed in mathematics.



## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Genre and Medium Awareness, Application, and Versatility: In Introduction to Statistics students read and analyze real world research data and articles. They learn the specific vocabulary of statistics and use it to answer the question of statistical significance.

Strategies for Understanding and Evaluating Messages: Students learn how to read and analyze statistical situations and determine which type of distribution is appropriate. Students learn how to read and analyze hypothesis testing situations and determine which type of statistical test is appropriate.

Evaluation and Production of Arguments: Students analyze statistical data sets and explain the question of statistical significance using several different statistical methods.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students learn how to state a null and alternative hypothesis given a situation context.

Evidence Acquisition: Students learn how to run statistical tests on given data sets.

Evidence Evaluation: After running statistical tests on given data sets, students learn how to evaluate the statistical tests based on the situation context.

Reasoning/Conclusion: Students learn how to develop a conclusion about a situation context.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information: Students learn how to chart given data sets in multiple ways including bar charts, pie charts, scatter plots, dot plots, line charts, and histograms. Students learn how to read data presented in multiple ways including bar charts, pie charts, scatter plots, dot plots, line charts, histograms, box plots, and spread sheets.

Analysis of Quantitative Arguments: Students learn how to interpret and analyze data presented in multiple ways including bar charts, pie charts, scatter plots, dot plots, line charts, histograms, box plots, and spread sheets.

Application of Quantitative Models: Given a set of data, students learn methods to appropriately display statistical data given the context and audience.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 13 2019



Upload Assessment

Completed - Mar 14 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

NM Gen Ed IntroTo Stats Assessment File

Filename: NM\_Gen\_Ed\_IntroTo\_Stats\_Assessment\_File.pdf Size: 1.1 MB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000221**

Joaquin Gallegos - joaquin.gallegos@nnmc.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joaquin Gallegos
Title	Chair of Biology, Chemistry, and Environmental Science
Phone	5057475480
Email	joaquin.gallegos@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Biology, Chemistry, and Environmental Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

### Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	ENVS
Number	1110L
Title	Environmental Science I Laboratory
Number of credits	1

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	ENVS
Number	1110
Title (if applicable)	Environmental Science I

## New Mexico Common Course Information

Prefix	ENVS
Number	1110L
Name	Environmental Science I Laboratory

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will exercise and develop communication skills in public speaking, technical writing, and research documentation.
2. Students will be relate current environmental issues to their personal, economic, and cultural circumstances.
3. Students will garner assessment and problem solving skills in areas relevant to health, quality of life, economic development, and cultural preservation.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Not applicable.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Within this interdisciplinary course lab of Environmental Science, students are instructed in critical thinking by means of tackling many of the current complex problems within our world related to the environment. Students are asked to critically think about the problems that face the environment and their immediate surroundings within pre-lab assignments, in which they are asked to define the problems that face our environment. Because of the interconnectivity of environmental problems, defining a problem is a key skill. System thinking will be used to map ecological issues and assist with defining a problem for select pre-lab assignment. Placing a context on the problem is important so they understand how the problem arose. Because many environmental problems are complex and multifaceted, students will gather evidence to support their ideas on the context of a problem in a lab exercise on global environmental problems. At the beginning of the course, evidence can be everything from experiential and or anecdotal for small one-page assignments and through the duration of the course, students transition to citing credible sources of evidence culminating in formal lab reports. The process of gathering data facilitates student/instructor interactions to assist students to understand what is and is not credible evidence. From this process students can now draw conclusions to understanding source of environmental problems for their formal reports. Using this model numerous times within the course, on different assignments, students develop skills that allow them to question and understand.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students taking environmental science courses will be exposed to a variety of articles. Students will have to summarize these articles into concise summarizations of quantitative data as part of pre-lab assignments. They will be required to interpret visual representations of data and/or equations. Students will in turn take these data to be used for guided interpretation that will require summarization of results, implications, and arguments. Guided interpretation will include a brief discussion on statistics, the power of statistics, and its potential abuse. Students will be assessed by their critique of the quantitative arguments presented in the articles, where some articles will have valid and other invalid arguments. This will demonstrate understanding of quantitative information, quantitative arguments, and quantitative reasoning. The end result of interpretation will be a submitted assignment/s where students apply their new knowledge and determine if, when, and which quantitative model will be appropriate for use. Within the course students will be required to interpret demographic graphs on tests and other assignments. Interpretation will require students to understand how these graphs are used by demographers to identify growing/decreasing populations. A lab will assess students use of reproduction models of R and K reproduction strategies to animals, related to carrying capacity and long-term population sustainability.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Environmental Science, with its global view, facilitates discussion on how different cultures interact with their environment. Students can use reference from their culture for in class discussions, while exploring how different cultures adapt to their environment. Students will be assessed in exams focusing on how cultures across the globe in arid areas have adapted to their environments like those of New Mexico. Students are asked to respect other cultures and understand the how and why different cultures evolved within different environments and will be assessed on this in homework assignments. Students are assessed on the interconnectivity of environmental problems and how social, political, economic, demographic, and other factors influence environmental issues/problems in assignments and formal reports. This allows students to understand their responsibility on the local and global level and how impacts can be made on multiple levels which will be assessed during group work assignments. Part of this process supports ethical reasoning to be based on multiple perspectives and cultures. Group work allows students within the course to share perspectives, work through competing/conflicting perspectives, and can result in improved products. The overall goal is to facilitate student reflection on how their life, lifestyle, and choices impact the sustainability and future of their community, local and global. These interactions can be used in subsequent reports in the lab that address global environmental issues, with an emphasis on evidence-based solutions for sustainability. Students will engage in open discussion where controversial environmental topics such as trophy hunting, confined animal feeding operations, wilderness areas, etc. will be discussed to promote civil public discourse where students will be assessed on their ability to present opposing viewpoints in respectful manner and will be the subject of a lab. Students will be assessed on the ability to articulate their perspective and present evidence to support their stance.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/curricular-assessment/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



**Upload Assessment**

**Completed** - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**Country Problem Lab**

**Filename:** Country\_Problem\_Lab.docx **Size:** 15.7 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000030**

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 13 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	BIOL
Number	1110
Title	General Biology
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	BIOL
Number	1110L
Title (if applicable)	General Biology Laboratory

## New Mexico Common Course Information

Prefix	BIOL
Number	1110
Name	General Biology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the value of the scientific method as a means for understanding the natural world and for formulating testable predictions.
2. Explain how chemical and physical principles apply to biological processes at the cellular level.
3. Understand basic concepts of cell biology.
4. Understand that all organisms share properties of life as a consequence of their common ancestry.
5. Understand fundamental processes of molecular biology.
6. Understand the mechanisms of evolution, including natural selection, genetic drift, mutations, random mating, and gene flow.
7. Understand the criteria for species status and the mechanisms by which new species arise.
8. Understand methods for inferring phylogenetic relationships and the basis for biological classification.
9. Recognize the value of biological diversity (e.g., bacteria, unicellular eukaryotes, fungi, plants, and animals), conservation of species, and the complexity of ecosystems.
10. Explain the importance of the scientific method for addressing important contemporary biological issues.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical thinking skills are assessed by performing an experiment involving the counting cells at different stages of mitosis. (See Appendix One). The assigned problem is restated by the student in their laboratory report. Evidence acquisition, in this case the counting of cells, is done by students in pairs. The class results are compiled. The reliability of the data is evaluated by comparing the class data with the results of each pair of students. Those students with a sufficient background in statistics are able to perform variance analysis, but this is not required. Conclusions are drawn about the length of each stage of the cell cycle by calculating the percentage of cells in each stage and relating the percentages to the given total length of the cell cycle. Students are asked to explain why different pairs ended up with very different conclusions from their results compared to the class results. Students are expected to discuss whether “outlier” results should be included or omitted from the class data. The concept of sample size is introduced. Data from the experiment is also compared to results found in the literature. This experiment is also assessed with respect to another essential skill in science – quantitative reasoning. Component skills for quantitative reasoning such as representation of quantitative information, interpretation and analysis of data are evaluated. For this particular lab report the assessment focuses on a well-reasoned evaluation of the quality of the data collected by the students.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning is assessed using an experiment that tested 12 food items for the presence of starch, reducing sugar, lipid and protein. Initially students “test the tests” by performing the tests on samples of starch, reducing sugar, protein and lipids so that they are able to recognize a positive test (a specific color change) for each substance.

Each pair of students tests each food for the four substances. Results are recorded as positive, negative, slightly positive and undetermined. Foods are deliberately selected to provide challenges such as using some foods which are colored prior to the testing. Data from all the pairs is compiled and students are assessed with respect to their ability to represent the data in the form of graphs and/or tables. Analysis and interpretation of the data is required. Students are expected to explain why there are discrepancies in the results. Suggestions for the improvement of the laboratory procedure are required.

Students are expected to relate their data to the real world by comparing their data to what the literature states regarding the biochemical content of each food.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal & social responsibility are assessed primarily through the evaluation of debates presented by 5 or 6 teams of four students each. The debate is worth 10% of the students' final grade and a brief period is allocated at the beginning of the weekly lab sessions for the teams to meet and discuss their progress in preparing for their debate. The debate topics are selected so that sustainability and the natural and human world and/or civic discourse, civic knowledge & engagement are key elements of the debates. The topics include climate change, embryonic stem cell research, use of genetically modified crops (GMO's) and the Endangered Species Act. A complete list of the topics is provided in Appendix Two. Ethical reasoning is also involved with several of the topics.

Collaboration skills, teamwork and value systems are observed and evaluated throughout the preparation time. Debate handouts are prepared for all the students by each team summarizing the pros and cons of their arguments as well as providing sources of information including at least one peer-reviewed article. Five percent of the student's final grade is based on the quality of the student handouts and 5% is based on the quality of the oral presentation and the teamwork demonstrated prior to the debate.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 10 2019



Upload Assessment

Completed - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## BIOL 1110 assignment

Filename: BIOL\_1110\_assignment.pdf Size: 94.1 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000061**

Elena Viltchinskaia - elena@nmml.edu

NM General Education Curriculum



Application Form

Completed - Mar 15 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Elena Viltchinskaia
Title	Professor of Chemistry
Phone	5756228131
Email	elena@nmml.edu

### Submitting Institution

Name of HEI	New Military Institute
Submitting Department	Science

### Chief Academic Officer

Name	D. Murray
Email	dmurray@nmml.edu

### Registrar

Name	C. Wright
Email	wright@nmml.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	CHEM
Number	1214
Title	General Chemistry I
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	CHEM
Number	1210L
Title (if applicable)	General Chemistry I Lab

### New Mexico Common Course Information

Prefix	CHEM
Number	1214
Name	General Chemistry I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:

<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply dimensional analysis, significant digits rules and SI system of units in solving real life scientific problems. Understand classification of matter, and physical and chemical properties of matter.
2. Understand atomic theory and the structure of isotopes, describe subatomic particles, mass numbers and atomic numbers. Use the Periodic Table to solve real life problems relevant to the structure of atoms and isotopes.
3. Use IUPAC rules to name ionic and molecular compounds.
4. Understand and perform stoichiometric calculations such as mole/mass/number of particles calculations, percent composition, empirical and molecular formulas, actual and theoretical yield, percent yield and limiting reactant calculations.
5. Explain different types of chemical reactions and balance chemical equations. Calculate different types of concentrations, such as percent, molarity, and mole fraction. Use titration to calculate concentration of a solution.
6. Apply the kinetic molecular theory and gas laws to describe, predict and calculate different parameters of a gas. Gas stoichiometry calculations.
7. Understand, describe and use basic principles, laws and functions in thermodynamics. Conduct basic thermodynamic calculations which include enthalpy of chemical reactions, standard enthalpy of formation, calorimetry, the first law of thermodynamics, and Hess's law.
8. Understand, describe and use basic ideas, principles, equations and rules of electromagnetic radiation, quantum theory, quantum numbers, and quantum mechanics. Write electron configurations for atoms and ions using general rules and principles of assigning electrons to atomic orbitals.
9. Understand and use the Periodic Table to explain and predict periodic trends in effective charge, size of the atoms, ionization energy, electron affinity, electronegativity, and other physical and chemical properties of the elements.
10. Understand Lewis structures of ionic and molecular compounds. Use formal charges to predict stability of resonance structures. Use bond enthalpies in thermochemistry. Understand polarity of bonds.
11. Use VSEPR model to predict shape and polarity of molecules. Understand hybridization of atomic orbitals.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical thinking is an integral component of the scientific method and science itself. Development of critical thinking skills is an important part of teaching/learning general chemistry which commonly employs the scientific method. It includes gathering and assessing relevant scientific data and information, forming a hypothesis, designing and conducting research, critically interpreting data and assessing the quality of results, forming well-reasoned scientific conclusions and solutions, and keeping an open mind as to how new discoveries can impact the environment and influence our well-being. Every topic learned in general chemistry requires an application of critical thinking. For example, an understanding of the atomic theory and its application requires critical interpretation of data, critical analysis of scientific interpretations, and exercising independent thought and judgment in applying the theory. Only when a student can apply knowledge, critically evaluating the evidence and building a case based on facts, will the student be able to understand the theory at its core and grasp strongly the key concepts of the theory rather than simply trusting theory as immutable law on the basis of it being in a book or having been shown on a website. Another example is critically assessing the nature of chemical compounds prior to applying the IUPAC rules and naming the compounds. Generating and assessing solutions to scientific problems in stoichiometry or thermochemistry is another example of the development of critical thinking. Critically analyzing and defining the problem, planning and organizing the data, generating possible solutions and evaluating whether the solution works are thoroughly taught in class. Assessment is done by using in-class questioning and homework assignments, during tutoring, during Chemistry Club meetings, in class discussions, through self-assessment quizzes, and in quizzes and tests.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Chemical and physical properties of matter can be measured, expressed in and used in mathematical formulas and terms, approximations, and calculations. Quantitative reasoning is required in the classroom and laboratory learning processes. The ability to collect data and represent them digitally and graphically, to mathematically use data, and to evaluate the results are taught as essential steps of laboratory work and in the classroom. Certain topics, such as dimensional analysis, stoichiometry, thermochemistry and others, are taught using and emphasizing the quantitative reasoning technique. The process involves understanding a problem, finding important facts/data, understanding questions, devising a plan, carrying out calculations and checking the answer against the original problem to ensure the answer is sensible. When teaching quantitative reasoning I teach how to identify the relationships among the quantities in the problem and how to connect those relationships to appropriate operations, and how to conduct the calculations and evaluate the validity of the results. Assessment is done by using in-class questioning and homework assignments, during tutoring, during Chemistry Club meetings, in class discussions, through self-assessment quizzes, and in quizzes and tests.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Chemistry is a science that has the potential to transform human lives and significantly impact the environment. Advances in chemistry can improve quality of life in many ways. Progress in the fields of alternative energy, genetic modification, life-saving medicine, environmental rehabilitation, and the development of space-age materials are a few of the facets of personal and social responsibility as relates to chemistry that are discussed in class. Acid rain and acidification of the oceans, misuse of genetic modifications, climate change and the health effects of radiation, biochemical weapons, environmental pollution, and the mishandling or overuse of chemicals harmful to people, animals and nature are also discussed. Personal and social responsibility, such as ethical reasoning, being responsible for your own actions, treating other people with respect, concern for others' well-being, fairness to others, no plagiarism policy, and other, are discussed and reinforced in class and laboratory. Assessment is done through discussion, guided reading, and debates.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 14 2019



Upload Assessment

Completed - Mar 14 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Test



## Upload Rubric

Completed - Mar 14 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Test - Essential Skills

Filename: Test\_-\_Essential\_Skills.docx Size: 13.6 kB

## Application: 0000000224

Suzanne Balch - suzbal62@hotmail.com

NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Suzanne Balch Lindsay
Title	Asst VP Academic Affairs
Phone	575.562.22314
Email	Suzanne.Balch@enmu.edu

### Submitting Institution

Name of HEI	Eastern New Mexico University
Submitting Department	Physical Sciences

### Chief Academic Officer

Name	Jamie Laurenz
Email	jamie.laurenz@enmu.edu

### Registrar

Name	DeLynn Bargas
Email	DeLynn.Bargas@enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	PHYS
Number	113LP
Title	Survey of Physics Lab
Number of credits	1

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	PHYS
Number	113 P
Title (if applicable)	Survey of Physics

### New Mexico Common Course Information

Prefix	PHYS
Number	1115L
Name	Survey of Physics Lab

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Test ideas using modern laboratory equipment.
2. Estimate experimental uncertainties.
3. Use computers to analyze and report laboratory results.
4. Draw appropriate conclusions from quantitative scientific observations.
5. Accurately and clearly communicate the results of scientific experiments.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Test ideas using modern laboratory equipment.
2. Estimate experimental uncertainties.
3. Use computers to analyze and report laboratory results.
4. Draw appropriate conclusions from quantitative scientific observations.
5. Accurately and clearly communicate the results of scientific experiments.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion  
Laboratory experiments usually involve the testing of a physical idea.

1. Numerous kinesthetic operations are performed, including measurements of physical quantities. Each of these operations is essentially a problem that must be delineated. The problem is to ensure that the kinesthetic operations and measurements are accomplished in such a way as to accurately correspond to the theory being tested. For example, the theory of the pendulum specifies that a massive, point particle be suspended from a point. The problem is “what is the length of the pendulum; the point of suspension to the top, middle, or bottom of the pendulum bob?”
2. The experiment itself consists of the acquisition of evidence in the form of measurements of physical quantities.
3. The validity of the data is continually evaluated during the course of acquisition. Judgements regarding inherent uncertainties versus avoidable error must be made.
4. Conclusion: In the end, the student must take the pile of numbers that have been collected and infer truth or reality from those numbers.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

1. As part of data analysis and laboratory reports, students often present their results by means of graphs and writing.
2. Students interpret, analyze, and critique information and calculations.
3. Every lab requires the application of a theoretical model to predict the results of the experiment.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Civic discourse: Perhaps the greatest social responsibility in scientific work is the willingness to call accepted data and ideas into question. Once or twice a semester, students are assigned a lab which tests an idea which is wrong, despite having been promulgated by a recognized expert. Student lab reports are examined for evidence that they, without being told of the expert's error, have discovered for themselves that the self-evident idea is wrong. An example is Galileo's statement that the period of a pendulum is independent of the amplitude. This idea is violated weakly for larger amplitudes but students are generally unaware of this fact. Sufficiently careful measurements will show that Galileo was wrong.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

Pending

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHYS113L-1115L-SurveyOfPhysics Lab ex assess

Filename: PHYS113L-1115L-SurveyOfPhysics\_Lab\_ex\_assess.pdf Size: 472.3 kB



Upload Rubric

Incomplete



The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000246

Suzanne Balch - suzbal62@hotmail.com  
NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

#### Contact Information

Name	Suzanne Balch Lindsay
Title	Asst VP Academic Affairs
Phone	5755622314
Email	Suzanne.Balch@enmu.edu

#### Submitting Institution

Name of HEI	ENMU Portales
Submitting Department	Physical Sciences

#### Chief Academic Officer

Name	Jamie Laurenz
Email	jamie.laurenz@enmu.edu

#### Registrar

Name	DeLynn Bargas
Email	DeLynn.Bargas@enmu.edu

#### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

#### Institutional Course Information

Prefix	PHYS
Number	152LP
Title	General Physics Laboratory
Number of credits	1

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	PHYS
Number	152 P
Title (if applicable)	General Physics

**New Mexico Common Course Information**

Prefix	PHYS
Number	1240L
Name	Algebra-Based Physics II Lab

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the scientific method.
2. Test ideas using modern laboratory equipment.
3. Estimate experimental uncertainties using statistical methods.
4. Use computers to analyze and report laboratory results.
5. Draw appropriate conclusions from quantitative scientific observations.
6. Accurately and clearly communicate the results of scientific experiments.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Laboratory experiments usually involve the testing of a physical idea.

1. Numerous kinesthetic operations are performed, including measurements of physical quantities. Each of these operations is essentially a problem that must be delineated. The problem is to ensure that the kinesthetic operations and measurements are accomplished in such a way as to accurately correspond to the theory being tested. For example, the theory of the pendulum specifies that a massive, point particle be suspended from a point. The problem is “what is the length of the pendulum; the point of suspension to the top, middle, or bottom of the pendulum bob?”
2. The experiment itself consists of the acquisition of evidence in the form of measurements of physical quantities.
3. The validity of the data is continually evaluated during the course of acquisition. Judgments regarding inherent uncertainties versus avoidable error must be made.
4. Conclusion: In the end, the student must take the pile of numbers that have been collected and infer truth or reality from those numbers.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

1. As part of data analysis and laboratory reports, students often present their results by means of graphs and writing.
2. Students in each experimental group interpret, analyze, and critique information and calculations of other members of their group.
3. Every lab requires the application of a theoretical model to predict the results of the experiment.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

1. Civic discourse: An essential value in the scientific community is doubt. Whatever the initial guess or idea might be, there must be doubt so that contrary evidence can be recognized and ideas changed to be consistent with experience. The circuits lab exercises this essential attitude regarding ideas and experience.
2. Collaborative skills: Each lab requires group to act as a team in the collection and analysis of data.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

Pending

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHYS152L-1240L-AlgebraBasedPhysicsIIILab x assess

Filename: PHYS152L-1240L-AlgebraBasedPhysicsIIILa\_B0In5Gr.pdf Size: 181.8 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000099

Stephen Mathewson - smathewson@cnm.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Marissa Juarez
Title	FT English Faculty
Phone	224-4000 ext. 52294
Email	Mjuarez@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	ENGL
Number	2320
Title	Introduction to Fiction Writing
Number of credits	3



**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	2320
Name	Introduction to Fiction Writing

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Engage in a constructive conversation and community about fiction.
2. Read and critically engage with various works of fiction.
3. Compose creative works of fiction.
4. Provide respectful, honest, and critical feedback to peers about their work.
5. Learn a language that provides groundwork for workshop structure and peer critique.
6. Revise creative work based on peer feedback and critique.
7. Develop thoughtful workshop reflection on students' own writing and writing process.
8. Evaluate and engage with publication process.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

In this course, students will study a variety of fiction techniques (characterization, point of view, plot, perspective, distance, and dialogue) and genres (e.g., literary, historical, young adult, SciFi, horror, crime, and popular) to develop their craft. In analyzing published fiction, students will learn to identify the strategies the author uses to engage an audience, to fulfill their intended purpose, and to respond to a given socio-historical context. They will also evaluate these texts to determine stylistic and technical features within the writing, creating reader responses that support their interpretations of each text with evidence while giving them credit when appropriate. Further, students will identify the author's main points, key themes, and stance in order to understand the author's message. For example, students may read a selected short story to analyze the author's stylistic choices and to discuss how the writer creates a specific characterization with details such as dialogue, action, and description. After studying examples of fictional genres, students will create fictional texts that reflect an awareness of their writing situation, attending to their target audience, purpose, and context. Students will also develop their narrative technique, style, and voice, as well as other craft features of fiction. Students will engage in writing workshop and peer review to shape their work using peer and instructor feedback. Instructors will assess student compositions based on their appropriateness for the rhetorical situation (audience, purpose, and context); application of fiction writing strategies and techniques; use of supporting detail and description; and syntactical, mechanical, and grammatical clarity.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

In writing a short story (see attached Short Story Assignment with rubric), students will use everyday observations to identify lines of inquiry that will inform their work, and they may be required to conduct additional primary and secondary research to gather information about a chosen topic and to develop their craft. Students may use various research methods, including interviews, observations, or references to print publication to develop their characters, settings, storylines, or dialogue while striving for accuracy in the presentation of these elements. Students will then draw conclusions about their topic based on the research they've conducted and use these to craft informed and probable fictional texts. As students locate supporting information related to their fiction, they will evaluate this information to determine credibility, accuracy, purpose, bias, and relevance while reflecting on their own personal biases and assumptions. Students will create storyboards to develop plot and action within their stories, planning out exposition, rising action, conflict, climax, and resolution. Ultimately, students will craft fictional texts that include relevant supporting details to illustrate the subject, to create rich characterizations, and to present engaging plot lines. Instructors will evaluate students based on their use of fiction writing techniques and appropriateness for the chosen readership and purpose.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will develop skills in intercultural reasoning and competence by reading fictional texts written by authors of various cultural backgrounds, including those writing from U.S. and international contexts. As students engage texts written from a cultural point of view that differs from their own, they may be asked to consider how the author's stance has been informed by cultural factors such as religion, social relations, belief systems, and location. Class discussions of such texts would necessarily consider an author's cultural context, as an understanding of any writing situation includes details about contextual factors shaping a text's production.

Students will participate in writing workshop and peer review to shape their work using peer and instructor feedback; in so doing, they will develop collaborative skills, teamwork, and value systems related to the craft of fiction writing. The fiction class will reflect a "community of writers," where students will regularly post and share drafts for whole class discussion. As a community of writers, students and instructor will collaborate to provide each writer with feedback for developing the work, identifying and applying criteria to evaluate the work. To prepare for workshops and peer review sessions, students will consider the criteria, analyze the draft, and compose critiques outlining the value systems they used to assess the work. Critiques serve as a collaborative tool for supporting the community of writers and helping students to achieve individual and shared writing goals.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 19 2019



### Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### ENGL 2320\_Fiction Assignment with Rubric

Filename: ENGL\_2320\_Fiction\_Assignment\_with\_Rubric.docx Size: 23.0 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Rubric ENGL 2320

Filename: Rubric\_ENGL\_2320.docx Size: 13.2 kB

## Application: 0000000186

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



### Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Shiva Kumar Kyasa
Title	Assistant professor of Chemistry
Phone	575-538-6641
Email	kyasas@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

## Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	CHEM
Number	1215
Title	General Chemistry I for STEM Majors & lab
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	CHEM
Number	1215L,
Title (if applicable)	General Chemistry -1 lab (1 credits)



## New Mexico Common Course Information

Prefix	CHEM
Number	1215
Name	General Chemistry I for STEM Majors & lab

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for CHEM 1215 General chemistry-1; CHEM 1215L General chemistry-1 laboratory

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Students are expected to learn importance and application of chemistry in the following topics or course sections.

Course Description: General chemistry-1

This course is intended to serve as an introduction to General Chemistry for students enrolled in science, engineering, and certain pre-professional programs. Students will be introduced to several fundamental concepts, including mole, concentration, heat, atomic and molecular structure, periodicity, bonding, physical states, stoichiometry, and reactions.

#### Student Learning Outcomes: General chemistry-1

1. Use dimensional analysis, the SI system of units and appropriate significant figures to solve quantitative calculations in science.
2. Explain the structure of atoms, isotopes and ions in terms of subatomic particles.
3. Understand the differences between physical and chemical changes to matter, and utilize the IUPAC system of nomenclature and knowledge of reaction types to describe chemical changes, predict products and represent the process as a balanced equation.
4. Apply the mole concept to amounts on a macroscopic and a microscopic level and use this to perform stoichiometric calculations including for reactions in solution, gases and thermochemistry.
5. Apply the gas laws and kinetic molecular theory to relate atomic level behavior to macroscopic properties.
6. Describe the energy conversions that occur in chemical reactions and state changes, relating heat of reaction to thermodynamic properties such as enthalpy and internal energy, and apply these principles to measure and calculate energy changes in reaction.
7. Use different bonding models to describe formation of compounds (ionic and covalent), and apply knowledge of electronic structure to determine molecular spatial arrangement and polarity.
8. Analyze how periodic properties (e.g. electronegativity, atomic and ionic radii, ionization energy, electron affinity, metallic character) and reactivity of elements results from electron configurations of atoms.

#### Course Description: General chemistry-1 laboratory

General Chemistry I Laboratory for Science Majors is the first semester laboratory course designed to complement the theory and concepts presented in General Chemistry I lecture. The laboratory component will introduce students to techniques for obtaining and analyzing experimental observations pertaining to chemistry using diverse methods and equipment.

#### Student Learning Outcomes: General chemistry-1 laboratory

1. Demonstrate and apply concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value with the correct units, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and

appropriate measurement instrumentation (both analog and digital).

4. Prepare solutions with an acceptable accuracy to a known concentration using appropriate glassware.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Demonstrate mastery in experimental techniques, such as pressure measurements, calorimetric measurements, and spectrophotometric measurements
7. Draw conclusions based on data and analyses from laboratory experiments.
8. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
10. Design experimental procedures to study chemical phenomena.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

General chemistry-1 covers range of topics that develops critical thinking in students. Here are few examples that are associated with critical thinking component skills.

Problem setting: Students were asked to (i) convert measurements in one unit to another unit using dimensional analysis e.g.  $\mu\text{m}$  to  $\text{nm}$ ; convert mole to grams; (ii) calculating reaction yields from theoretical & actual yields (iii) find the concentration of dilute acids & bases. (iv) Finding the specific heat, heat of combustions using concept of heat capacity (v) Finding enthalpy of reaction using enthalpy

of formation values (vi) Photoelectric effect and its application in calculating the energy of given electromagnetic radiation (vii) calculating the number of protons, neutrons and electrons from atomic number and atomic mass etc. Open ended problems given to the student such as (i) Writing possible Lewis dot structure with/without satisfying octet rule (ii) denoting the electromagnetic radiation in various units e.g. frequency, wavelength, wavenumber (iii) compare and contrast chemical nature of elements e.g. carbon allotropes properties (iv) naming the compounds with different systems e.g. common vs. IUPAC.

Evidence Acquisition: Collect the data in the laboratory to address the problem relevant to critical thinking. Examples (i) measure volume and weight for density calculations. (ii) Distinguish the nature of matter (e.g. plastic vs. metal), based on density data (iii) Collect the weight of hydrate and anhydrate samples to find the hydrate formula which is an evidence for water molecules (iv) Synthesis of soap from hydrophilic and hydrophobic components as an evidence of cleaning action (v) thermite decomposition as an evidence of exothermic reactions

Evidence Evaluation: Evaluate the evidence in the form of data in the literature/text book and or the data collected in the lab. Examples: (i) Concept of octet rule and valence of elements are verified by counting the number of covalent bonds and non-bonded electrons (ii) gas laws and ideal gas law is verified by either in class demonstration using air balloon under vacuum and atmospheric pressure (iii) reactivity pattern of IA group explained reacting the sodium with water in the lab. (iv) Inertness of zero group elements explained based on the evidence of fully occupied valence orbitals.

Reasoning/Conclusion: (i) Developing conclusion on molar mass that reflects the mole concept rather than weight concept. Students recognize the flaw in taking consideration of by weight when working on stoichiometric problems and find the strong argument in mole will have Avogadro number of atoms/molecules. (ii) Change in periodic properties of elements e.g. atomic/ionic radii, effective nuclear charge, electron affinities across the period and groups can be concluded based the evidence of electron energy levels (orbits) and electron distance from nucleus.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative information: Part of the course students will be provided with various types of data such as problems, equations, graphs etc. that are relevant to proposed theories/principles. Examples: (1) dimension analysis used to convert the measurement, calculating reaction yields, actual yield, conversion of moles in to weight and number of atoms (2) enthalpy, entropy and Gibbs free energy equations. (3) calorimetric problems (4) Graphs and diagrams examples: radial probability diagrams for finding an electron from nucleus, orbital shapes and its significance, (5) gas laws that provides relation between pressure vs. volume, temperature vs. volume, number of moles vs. volume etc. Use of mathematical symbols examples sigma ( $\Sigma$ )- for summation of properties, delta - change in the reactions parameters, psi wave function, probability of finding electron, pie in the Debrogli equation,  $\lambda$  - wave length,  $q$  - partial charges on the atoms/ions.  $\mu$  - dipole moment, a vector addition of bond moments.

Analysis of quantitate arguments: Discussion on proposed principles and understanding the matter by studying different principles that are developed over a period of time, chronologically, by discussing prior theory limitations e.g. bonding theories includes valence bond theory, hybridization, and molecular orbital theory. Mathematical validation of principles e.g. Vander wall equation and its correction with respect to pressure and volume.

Application of quantitative models: Student verify the quantitative models in the laboratory setting, that are described in the text and discussed in the class. Examples (1) density measurement using mass and volume (2) standardization of acid or base using titrations using with pH indicator (3) types of reactions, oxidation, decompositions, displacement and double displacement (3) determine the number of water molecules in hydrate samples using mole concept by measuring wet and dry samples weights.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: This course gives broad idea of how world is modified to provide the comfort in human life which is different from natural world. Scientific contributions for sustainability, renewable power sources will be discussed. Ongoing environment issues and role of chemistry in solving those problems will be discussed. Role of chemistry in understanding the changes in nature e.g. measuring the pH of acid rain, mechanism behind the acid rains. Entropy concept how natural processes taking place, where randomness of universe continuously increases. Science applications in home appliances, example: dipole moment of water molecules in the food is a principle behind quick heating of food microwave ovens. Application of thermo chemistry principles e.g. explaining the defense mechanism in Bombardier beetle by discussing the reaction of hydroquinone and hydrogen peroxide to Quinone, using concept of enthalpy and Hess law.

Collaborative skills, teamwork and value systems: Students work collaboratively when homework given and work independently during the examinations. Students were given small projects to understand the effectiveness of teamwork. Student will be worked in groups of two or three to perform the laboratory experiments.

Civic knowledge and engagement – local and global: This course provide enough scientific knowledge that is required for a man to live healthy and think microscopically in molecular level. This course build scientific communication skills examples how to express temperature in different scales, use of significant figures to approximate the values, understanding the calorific value of foods that one eating, cleaning mechanism of soap that is something useful for maintaining health in everyday life.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtxsUi0CJHKV5-rKUrPnEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



**Upload Assessment**

**Completed** - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**3-CHEM- 1215-1215L Gen Chem I for STEM Majors & lab - Asses -WNMU**

**Filename:** 3-CHEM-\_1215-1215L\_Gen\_\_Chem\_\_I\_for\_S\_slPrWIA.docx **Size:** 68.6 kB



**Upload Rubric**

**Completed** - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**2-CHEM-1215\_1215L Gen Chem I for STEM Majors & lab - Syllabus -WNMU**

**Filename:** 2-CHEM-1215\_1215L\_\_Gen\_\_Chem\_\_I\_for\_S\_9P8a8EA.docx **Size:** 54.7 kB

**Application: 0000000162**

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater



### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	HIST
Number	238
Title	American Military History
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	HIST
Number	2145
Name	American Military History

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Understand the evolution of the Army's approach to warfare through the Guardian, Heroic, and Managerial schools of thought.
2. Appreciate the key relationship between political activity and policy with warfare.
3. Assess the ongoing role that militias have played.
4. Wrestle with the ongoing debate over the roles of conventional and unconventional warfare.
5. Realize the importance of external support to indigenous military operations.
6. Recognize the impact of the armed forces in American expansion.
7. Understand the place of our wars in shaping society.
8. Comprehend the relationship of diplomacy, politics, economics, and security issues in establishing national strategic policies.
9. Discover the roots of the military-industrial complex during the twentieth century.
10. Assess the impact of the modern security state on American society.
11. Determine the sources of professionalism among military leaders.  
To interpret sources and data in historical context...
12. Read and evaluate primary and secondary source materials.
13. Understand the role of revisionism in military history.  
To reflect on the roles that personal integrity, professional leadership, and communal ethics play in the day-to-day behavior of individuals and institutions.  
To develop verbal, written, and analytical skills...
14. Through discussion, assessments, and essays.  
To think historically and learn to formulate questions about the past and present, resolving conflicting interpretations, and drawing tentative conclusions from imperfect evidence...
15. Through the in-depth study of the American military experience.

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will analyze and critically interpret significant primary texts and/or works of art across the semester. Emphasis will be placed in these visual and written materials focus upon key elements and drivers of American military development through the lens and influence of American social, economic, and cultural institutions. These many elements could include the role of the militia and developing American military institutions during the formative colonial era, and the great influence of the interaction and ongoing clashes with Native Americans, within the context of American European military traditions and practices. Also, the prime influence of the colonial American Revolution as the real beginning of American military practices and traditions, with the military becoming a key element of the new nation and its need to expand and modernize during the early and mid-nineteenth century - as professionalization became a defining factor in developing American military power. In addition, the concentration upon technological advancement and industrialization beginning in the Civil War era and extending to the global conflicts of the twentieth century, and the U.S. military's prime role in the global balance of power in the contemporary era. In assessment, all students will take a comprehensive and objective final exam. Every multiple-choice question on the exam will be linked to one or more of the course objectives that address the area state competencies. Questions on the final exam will be based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. All exam questions will come from weekly unit quizzes and the midterm exam taken during the semester. Particular emphasis will be placed in lectures, written assignments and visual materials will be placed upon key elements of social, economic, and cultural institutions that are the drivers of the role and importance of the military in American history, in conjunction with lecture/reading outlines, documentary films, YouTube clips, and weekly review sessions to create an incremental sequence of student comprehension of the course objectives and competencies. Students will analyze how the United States military progressed from a backwards, militia-based, informal entity, to the most complex and powerful military in world history, and its central role in shaping American life and institutions.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives to identify the individual role of economy, society, government, religion, and culture in the history of the U.S. during the semester. Students will recognize and articulate the vital importance of the military in American History and its web of association and interdependence across the range of American historical periods and its influence upon every aspect of social or cultural aspects of American life, as well as its the role in society, the economy, government, and culture in the history of the U.S. The thematic concentration of the material particularly is focused upon ideas and traits related to the development of the United States military as a key national institution, internal and external factors that influence the role of the military in American society – as related to the rise and development of American military power and organization as a key base for the development of the American nation state from the Civil War through the contemporary era. In detail, students will trace and discuss the influence the military in Colonial life, interaction with Native Americans, the push for expansion territorially in North America and economically in the world, and the key role of growing American military power after the Civil War into the twentieth century. Students will discuss how the United States military enabled U.S. imperialism and expansion, participation in world war, and a rise in military and economic strength as a Superpower after World War II that contribute to the modern global standing of the United States. Students will recognize the origins of the American military and how it affected the domestic and foreign policies of the United States and the world. The use of lecture/reading outlines, documentary films, YouTube clips, and review sessions at the start and end of each class will create an incremental sequence of student comprehension of the course objectives and competencies.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

During the semester, students will be exposed to and required to use a range of digital platforms and media sources, including PowerPoint slide presentations, historical maps, primary documents, historical documentaries, YouTube video clips, subject related websites, and a host of other digital venues to reinforce visually the contextual basis of ideas, events, and trends discussed during the course of this class. These tools will be implemented in this course through various means in the face to face classroom environment, the Interactive Television platform, and through the Canvas Digital Learning platform and its many digital capabilities. Students will learn the basic computer skills, technological steps, and platform skills to access a course shell within Canvas in all classes to access the above mentioned digital course materials, as well as listen to and observe specially-created recorded lectures by the instructor using Camtasia digital video technology. Also, within the Canvas course shell, students will also utilize exam and quiz study guides, practice quizzes, written assignments, and student-driven threaded discussions questions that allow interaction with fellow classmates and the instructor.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

HIST 238-HIST 2145 Assessment

Filename: HIST\_238-HIST\_2145\_Assessment.pdf Size: 118.5 kB



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## HIST 238-HIST 2145 Syllabus

Filename: HIST\_238-HIST\_2145\_Syllabus.pdf Size: 90.0 kB

## Application: 0000000218

Joaquin Gallegos - joaquin.gallegos@nnmc.edu  
NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

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## Essential Skills

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6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility



7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joaquin Gallegos
Title	Chair of Biology, Chemistry, and Environmental Science
Phone	(505) 747-5480
Email	joaquin.gallegos@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Biology, Chemistry, and Environmental Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

### Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	CHEM
Number	1120L
Title	Introduction to Chemistry Lab
Number of credits	1

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	CHEM
Number	1120
Title (if applicable)	Introduction to Chemistry

### New Mexico Common Course Information

Prefix	CHEM
Number	1120L
Name	Introduction to Chemistry Lab

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Practice concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Record quantitatively measured values to the correct number of significant figures and assign the correct units.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Draw appropriate conclusions based on data and analyses.
7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
8. Determine chemical formulas and classify different types of reactions.
9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Not applicable

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Utilizing the scientific method, students in introductory chemistry will understand the importance of critical think in learning basic concepts of chemistry within the laboratory. Students will be assessed on the Dalton Atomic Model and how to identify and gather information from resources such as the periodic table for lab experiments. They will have to process this information and how it relates to chemical bonding, oxidation, ionic, and covalent bonding on for lab reports students will be assessed on their ability to identify the different types of interactions between chemical substances. Many lab exercises will follow the process of defining a problem and the scientific method. Stoichiometry will be used to assess student's scientific reasoning and refine the skill of identifying flaws within presented materials. This can be as simple as balancing a chemical equation, so student can predict result of lab exercises. Students will be instructed and assessed on the scientific method, focusing on question definition, hypothesis generation, supporting evidence gathering (determination if evidence is valid or invalid), collecting data, and formulating a valid conclusion in lab reports and exercises. Utilizing open ended questions in the course, students will be required to explain answers will reinforce the scientific method within the lab.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning within chemistry is pivotal as students will be required to interpret and assessed on chemical concepts including the Dalton Atomic Model, chemical equations, and acids and bases within lab reports and exercises. Using the periodic table and other visual representation of data students will be assessed solving basic equations and their ability to apply quantitative models to predict products of a chemical experiment. Balancing chemical equations, determining limiting factors, and other activities require students to analyze the quantitative argument and the application of a quantitative model with lab activities such as titrations. Within these problems is an inherent logic and line of argument that the student will have to validate or determine Determining valence electron organization, pH, and various conversions will evaluate a student's ability to apply specific models in a correct manner. Also utilizing the narrative nature and procedure of a lab exercise, students will be evaluated on the analysis of quantitative arguments and following the reasoning. Within simple chemical equations there is an inherent argument and reasoning that leads students to the correct answer. Similarly, these concepts will also be assessed in pre-lab assignments. Utilizing many of the real-world problems like acid rain, water pollution, and others, students relate these modern problems to concepts learned in their lab exercises.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Chemistry plays a role within personal and social responsibility by the impacts of chemical reactions on human basic needs. The lab will touch on issues related to air, water, energy, and other issues that impact modern life. Issues such as demand for certain consumer goods that are produced by chemical process and how these goods impact our world. Basic acid/base labs will demonstrate how many demands for power, including batteries are important in our lives. It will also address the sustainability of our current battery production and how battery disposal is of a major issue. Also, the lab will show how advances within chemistry are solving the problems of modern society. Additionally, how new technologies can utilize chemistry to remediate existing and future modern-day problems. One lab assignment will be looking at the chemical compounds of traditional remedies and how those compounds interact within a body.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/curricular-assessment/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Flame photometry



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000189

David Torres - davytorres@nnmc.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	David Torres
Title	Chair of Mathematics and Physical Science
Phone	5057472174
Email	davytorres@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Mathematics and Physical Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

### Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information



Prefix	GEOL
Number	101
Title	Physical Geology
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

#### **Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

#### **New Mexico Common Course Information**

Prefix	GEOL
Number	1110
Name	Physical Geology

#### **A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

#### **B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Recall, describe or explain geologic vocabulary.
2. Identify or explain aspects of the geologic time scale and compare the uses and limitations of relative and absolute dating.
3. Recognize or explain the evidence used to support the theory of plate tectonics. Describe or identify how plate tectonics is related to the structure and features of the Earth.
4. Describe the formation of, and describe, compare, and classify minerals.
5. Identify or describe the three main rock types, how each forms in the context of the rock cycle and what each indicates about its environment of formation.
6. Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.
7. Describe or discuss the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
8. Recognize or describe the geologic processes involved in the formation and concentration of geologic resources.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

No additional institution-specific student learning outcomes are planned.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

All the Student Learning Outcomes will be covered in the class. For example, Student Learning Outcome 6. (Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.) requires critical thinking to understand how multiple processes interact with each other.

In this narrative, we will discuss the assessment of Student Learning Outcome 7, Describe or discuss the processes that are responsible for specific geologic hazards. Students will be asked to present or report on the causes of global warming in the past and in the present. In the past, previous geologic events can be tied to global warming, These include plate tectonics and volcanic eruptions, meteor impacts, changes in ocean currents, and vegetation coverage. Global warming in the atmosphere should be attributed to greenhouse gases which include carbon dioxide, methane, water vapor, and nitrous oxide. This research will require evidence acquisition and establishes the problem setting. Students will be asked to explain how the greenhouse gases absorb outgoing radiation thus warming the atmosphere. Concentration of each of the greenhouse gases and the relative impact of each of the gases should be researched (evidence evaluation). Positive feedback cycles can be described. For example, when ice melts in the high latitudes, the bare ground absorbs more radiation which leads to increased warming. In addition, high ocean temperatures lead to decreased solubility of carbon dioxide which increases the amount of carbon dioxide in the atmosphere. These feedback cycles require reasoning.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

All student learning outcomes will be covered in the course. For example, quantitative reasoning is required to understand carbon dating and radioactive dating.

In this narrative, we will discuss Student Learning Outcome 7. Quantitative reasoning will be learned and assessed through data analysis as part of the report or presentation on global warming. Data analysis should include the concentration of each of the greenhouse gases over time, sea surface temperature, and melting of ice and glaciers in the north and south poles. Students will thus demonstrate how to use and present quantitative information. For example the National Oceanic & Atmospheric Administration (NOAA) site <https://www.esrl.noaa.gov/gmd/ccgg/trends/full.html> plots the growth of carbon dioxide in parts per million over the last sixty years. Students can compute the acceleration of the carbon dioxide increase by computing the slope of the curve using two points in mid-twentieth century, two points near the end of the twentieth century, and two points at the current time thereby requiring students to use quantitative arguments. Similarly students can also track the changes in sea surface temperature over time using the same process. Sea surface temperatures for the last 140 years can be found at the US Environmental Protection Agency site <https://www.epa.gov/climate-indicators/climate-change-indicators-sea-surface-temperature>. Historical changes in ocean currents can also be described. Students can describe the processes that remove greenhouse gases from the atmosphere. Students should also identify positive and negative relationships between variables and feedback loops and thus apply quantitative models.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The burning of fossil fuels has led to the increase of carbon dioxide in the atmosphere which scientists believe has caused increased temperatures and extreme weather events. Students will be asked to assume the role of a state senator. As a representative of the state, they will need to decide whether our current transportation system and processes for energy generation are sustainable considering the trends in global warming. They will be asked to devise legislation that they believe will help stem the rapid increase in carbon dioxide concentration and greenhouse gases. Students will need to support their views through written or oral discourse using scientific facts. Proposed legislation needs to be practical and be cognizant of economic implications. For example, if a student recommends the use of smaller cars or proposes legislation that requires improved gas efficiency, what will be the effects on the state economy? If public transportation is developed and/or improved, will it be used by citizens? The impact and cost of renewable sources (wind and solar) can also be described. Collaboration skills will be developed by allowing students to work in teams.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/assessment-2/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Assessment Activity for GEOL 1110

Filename: Assessment\_Activity\_for\_GEOL\_1110.docx Size: 50.4 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Application: 0000000100

Frank Kimbler - kimbler@nmml.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Frank S. Kimbler
Title	Asst. Professor of Earth Science
Phone	575-624-8160
Email	kimbler@nmml.edu

### Submitting Institution

Name of HEI	NMML
Submitting Department	Department of Math and Science

### Chief Academic Officer

Name	BG Douglas Murray
Email	dmurray@nmml.edu

### Registrar

Name	Chris Wright
Email	Wright@NMML.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	GEO
Number	1234
Title	Environmental geology
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

Yes

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	(No response)
Number	(No response)
Name	(No response)

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**



## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- Apply the scientific method to the field of environmental geology and differentiate between facts and opinions.
- Recognize or describe natural cycles, for example the rock cycle, hydrologic cycle, and carbon cycle.
- Discuss and explain the role humans play in environmental problems and in solutions to those problems; relate environmental geology to your life and its portrayal in the media.
- Recognize, discuss or explain geologic hazards and their impact on humans and how these impacts can be minimized.
- Recognize or explain a holistic approach to sustainability (mineral, energy, water and soil resources) on local to global scales while minimizing negative impacts on the environment.
- Recognize, discuss or explain global environmental issues, including climate change, and the varied responses to these issues.

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Demonstrate critical thinking by sound analysis of context and content.

Demonstrate written communication by proper use of sentence structure, content and mechanics

Demonstrate oral communication being clear and articulate

Demonstrate information literacy by accessing and effectively extracting relevant information ethically and legally

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Students in GEOL 1234 develop critical thinking skills by engaging in assignments that require them to make observations and interpret various environmental geology concepts. Each lecture and lab requires students to use some form of observation, relational and critical thinking skills to analyze, discuss, interpret and evaluate the problems and potential solutions to natural and environmental disasters. Overpopulation, resource consumption, global climate change, waste disposal issues, natural hazards, and the role that our civilization plays in these issues are examined by the students, debated, and assessed. One of the labs has students investigate the human impact on climate and weather by using charts, graphs and data tables to evaluate possible human influences on climate.

### **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models**

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of quantitative reasoning. 200 – 300 words.*

Students in GEOL 1234 lecture and lab use quantitative skills to solve problems related to environmental geology, including solving problems in resource management, environmental hazards and their mitigation. Students use a variety of quantitative data acquired from maps, profiles, tables, charts and written descriptions to analyze, solve and discuss environmental geology and processes.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

During labs students work together on assignments honing their communication, collaboration and teamwork skills to solve environmental geology problems. One of our labs has students analyze global climatic data They use their combined team skills to interpret the the impact that subtle change has on our climate, locally and globally. Students gain insight in to the environmental processes that may impact our world today. They discuss and and present their findings on how our resources, agriculture and commerce are impacted by environmental change and hazards, both locally and globally

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 19 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Environmental lab

Filename: Environmental\_lab.pdf Size: 1.3 MB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000097

Frank Kimbler - kimbler@nmml.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17**,

**2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Frank S. Kimbler
Title	Asst. Professor of Earth Science
Phone	575-624-8160
Email	kimbler@nmml.edu

### Submitting Institution

Name of HEI	NMML
Submitting Department	Department of Math and Science

### Chief Academic Officer

Name	BG Douglas Murray
Email	dmurray@nmml.edu

### Registrar

Name	Chris Wright
Email	Wright@NMML.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

### Institutional Course Information

Prefix	GEO
Number	1224
Title	Historical Geology
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

Yes

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	(No response)
Number	(No response)
Name	(No response)

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- List the major principles of stratigraphy and biostratigraphy and discuss their significance.
- Recognize or explain how sedimentary rocks can be used to interpret ancient environments.
- Recognize or explain how plate tectonics has affected the distribution of life, climate, and sea level.
- Describe the process of Darwinian evolution.
- Demonstrate a basic knowledge of biodiversity.
- Recognize and explain taphonomy and the biases inherent in the fossil record.
- Discuss the major mass extinctions recorded by fossil evidence including potential causes and organisms affected.
- Compare relative versus absolute time and explain how geologists determine the ages of rocks, fossils, and the Earth.
- Discuss the development of the geologic time scale.
- Recognize or explain the history of life on Earth during major time periods and describe major biological innovations through time.
- Recognize or explain the physical geologic evolution of Earth over time.

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Demonstrate critical thinking by sound analysis of context and content.

Demonstrate written communication by proper use of sentence structure, content and mechanics

Demonstrate oral communication being clear and articulate

Demonstrate information literacy by accessing and effectively extracting relevant information ethically and legally

### **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students in GEOL 1224 develop critical thinking skills by engaging in assignments that require them to make observations and interpret historical geology concepts. Each lecture and lab requires students to use some form of observation, relational and critical thinking skills to analyze, discuss and interpret earth materials, fossils, layering of rocks, earth processes throughout history, evolution of life forms throughout history and to understand the methods that geologists use to study the earth's complex history. An example is the stratigraphic column lab. Students are given data for two different geologic areas. The numerical and written data is used to construct two relative and absolute date columns. The columns are compared. Students correlate the two columns and discuss why the layers are missing and some layers are the same between the columns. This lab is also a graphing and measuring exercise and incorporates the geologic time scale.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students in GEOL 1224 lecture and lab use quantitative skills to solve problems related to historical geology, including solving problems in radioactive decay to determine the age of rocks, thickness of beds determined by depositional rates, rate of continental and oceanic crustal movement and its relationship to building continental land masses over time. Students use a variety of quantitative data acquired from geologic maps, profiles, tables, charts and written descriptions to solve and discuss historical geology phenomena and processes.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

During labs students work together on assignments honing their communication, collaboration and teamwork skills to solve historical geology problems. One of our labs has students analyze a series of fossil bearing rocks, dinosaur footprints, trace remains and rock structures. They use their combined team skills to interpret the environment that the animal lived in and how it became fossilized. By interpreting past environments students gain insight in to the processes that may impact our world today.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

GEOL 1224 Historical poort and Carlson lab

Filename: GEOL\_1224\_Historical\_poort\_and\_Carlson\_lab.pdf Size: 3.1 MB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000055

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



Application Form

Completed - Mar 18 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17**,

**2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joel Keranen
Title	Professor of Physics
Phone	5754922820
Email	jkeranen@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PH
Number	224
Title	Engineering Physics II
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	PHYS
Number	1320C
Name	Calculus-based Physics II

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply the concepts of electric charge, electric field and electric potential to solve problems.
2. Sketch the electric field in the vicinity of point, line, sheet, and spherical distributions of static electric charge.
3. Sketch the magnetic field in the vicinity of line, ring, sheet, and solenoid distributions of steady current.
4. Describe the relationship between electric field and electric potential.
5. Calculate the Lorentz force on a moving charge for simple geometries of the fields and use it to analyze the motion of charged particles.
6. Apply the integral forms of Maxwell's equations.
7. Calculate the energy of electromagnetic fields.
8. Analyze DC circuits.
9. Analyze AC circuits
10. Describe and apply the laws of thermodynamics
11. Develop a reasonable hypothesis.
12. Work effectively as part of a team.
13. Take measurements and record measured quantities to the appropriate precision.
14. Estimate error sources in experimental techniques.
15. Apply appropriate methods of analysis to raw data, including using graphical and statistical methods via computer-based tools.
16. Determine whether results and conclusions are reasonable.
17. Present experimental results in written form in appropriate style and depth.
18. Experience the relationship between theory and experiment

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

To develop critical thinking skills in this course, students will

1. Complete laboratory reports in the lab portion of the course wherein they will develop the ability to express quantitative information symbolically, graphically, and in written language.

(Communication/Representation of Quantitative Information)

2. Complete a peer graded assessment of a laboratory report to interpret, analyze, and critique information by others. (Analysis of Quantitative Arguments)

3. Participate in a cumulative lab practical as a part of the final exam for the laboratory. The practical consists of presenting student with a set of devices and instruments, asking students to determine physical principles that can be tested with the device and analyzing the results of these tests.

(Application of Quantitative Models)

4. Participate in the assessment: Conceptual Survey of Electricity and Magnetism. Students will solve conceptual problems by use of physics concepts of electricity and magnetism. (Problem Setting and Reasoning/Conclusion)

5. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition and Evidence Evaluation)

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning skills in this course, students will

1. Use the knowledge taught in lecture and laboratory to address and solve specific problems in physics.

(Problem Setting and Evidence Acquisition)

2. Students will evaluate certain problems, within lecture and laboratory, for their physical validity to learn to develop conclusions, solutions, and outcomes that reflect an informed, well reasoned evaluation.

(Representation of Quantitative Information and Reasoning/Conclusion)

3. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition, Evidence Evaluation, Representation of Quantitative Information, and Analysis of Quantitative Arguments)

4. Participate in an assessment, “Conceptual Survey of Electricity and Magnetism”. This test consists of solving physics problems in electricity and magnetism, to test students on basic physical principles in electricity and magnetism. (Problem Setting, Evidence Acquisition, Reasoning/Conclusion)



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To develop personal and social responsibility skills in this course, students will

1. Write a group laboratory report on an experiment in which they work together as a team. Student interaction within their group will be integral in this experiment. (Collaboration Skills and Teamwork)
2. Visit an electrical generating station and write notes on all possible physics applications on the processes in the station. The notes will be analyzed and discussed. (Civic Discourse, Civic Knowledge, Evidence Acquisition, and Reasoning/Conclusion)
3. Read an article about unethical behavior in physics and engineering to evaluate the evidence and data for credibility. Students will write a report about this article in the framework of concepts learned in lecture and laboratory. Specific examples of error and fraud are to be addressed. This assignment will assess the ability of the students to recognize and mitigate unethical behavior in their own work and others. Ethical reasoning will be central to this assignment. (Ethical Reasoning and Evidence Evaluation)
4. Students will write an essay on the importance of the electrical infrastructure on civilization and society. (Sustainability and the Natural and Human Worlds)

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## CSEM

Filename: CSEM\_Nal1sq1.pdf Size: 343.5 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000024

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



Application Form

Completed - Mar 12 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	BIOL
Number	1625
Title	Introduction to Ecology and Field Biology
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	BIOL
Number	1625
Name	Introduction to Ecology and Field Biology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply basic ecological principles as applied to field biology.
2. Employ a number of basic ecological field sampling and measurement techniques.
3. Recognize the major habitat types present in northern New Mexico
4. Use dichotomous key with proficiency to identify flora and fauna

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

An important part of ecology is actually doing ecological research, and students undertake a semester-long field research project on a topic they choose. Students choose an ecological question that they can answer in the field or in the laboratory. Students begin the project by submitting a one-paragraph project proposal outlining the chosen ecological question, proposed study methods and a citation of one peer-reviewed source applicable to their project (problem setting). Several months later, students submit an annotated bibliography with a minimum of 8 sources, 7 of which must be peer-reviewed scientific literature. Students write annotation that assess the sources' arguments and evaluate the impact of the data on their understanding of their ecological question (evidence acquisition & evidence evaluation). During this time students also make observation in the field/lab and collect data relevant to their project (evidence acquisition & evidence evaluation). The final part of the project is a 15-minute oral teaching presentation to the class using some form of presentation program like PowerPoint or Prezi. The students present their ecological project, the data they collected and compare that data with the peer-reviewed literature that they reviewed in their annotated bibliography (evidence evaluation & reasoning/conclusion).

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

For some organisms, estimating population size can be very challenging, and ecologists have developed a variety of sampling methods to estimate the population size of different organisms. In one lab, students use one sampling method – mark recapture – to estimate the population size of ants (application of quantitative models). They mark ants with a non-toxic marker and return to count the number of marked versus unmarked ants. From these values, they can estimate the population size of ants active outside of the nest (application of quantitative models). They use information derived from a peer-reviewed source to translate the externally active number of ants into an estimate of the population of the ant colony (analysis of quantitative arguments). Students then describe (in written format) their findings graphically, and symbolically in the write up for the lab (communication/representation of quantitative information).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

In this class, students read one of the seminal works addressing the “sustainability and the natural and human worlds” and environmental/ecological “ethical reasoning” – Aldo Leopold’s “Sand County Almanac” (1966). Of particular importance, they read, discuss and analyze Leopold’s essay “The Land Ethic”, and compare it to a more recent essay by Barry Lopez - “Rediscovery of North America” (1992). By comparing and contrasting the content of “The Land Ethic” and “Rediscovery of North America”, students wrestle with historical, ecological, contemporary, anthropological and political aspects of interaction between humans and rest of the living world. They grapple with their individual role in the processes and many come away with a changed idea of their personal and social responsibilities. Students are assessed on this critical skill through their writing about the essays on a homework (see attached assignment and rubric) and also on the final examination.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 8 2019



Upload Assessment

Completed - Mar 8 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

biol115 20ReadingQs

Filename: biol115\_20ReadingQs.docx Size: 15.9 kB



## Upload Rubric

Completed - Mar 8 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### HW Rubric

Filename: HW\_Rubric\_ucaCCuo.docx Size: 13.7 kB

## Application: 0000000048

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



## Application Form

Completed - Mar 18 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility



7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joel Keranen
Title	Professor of Physics
Phone	5754922820
Email	jkeranen@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PH
Number	114
Title	General Physics I
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	PHYS
Number	1230C
Name	Algebra-based Physics I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate converting units and other aspects of dimensional analysis in the working of numerical problems.
2. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of particles in one and two dimensions.
3. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of a rigid body in two dimensions.
4. Apply Newton's theory of gravitation to circular orbits and demonstrate understanding of how Kepler's laws of planetary motion provide the empirical foundation for Newton's theory.
5. Apply the mathematics of vectors to the principles of Newtonian mechanics.
6. Apply principles of Newtonian mechanics to the case of static and dynamic incompressible fluids, including Archimedes' and Bernoulli's principles.
7. Explain the basic concepts of heat and thermodynamics.
8. Explain the scientific method.
9. Test ideas using modern laboratory equipment.
10. Estimate experimental uncertainties using statistical methods.
11. Use computers to analyze and report laboratory results.
12. Draw appropriate conclusions from quantitative scientific observations.
13. Accurately and clearly communicate the results of scientific experiments.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

To develop critical thinking skills in this course, students will

1. Complete laboratory reports in the lab portion of the course wherein they will develop the ability to express quantitative information symbolically, graphically, and in written language.

(Communication/Representation of Quantitative Information)

2. Complete a peer graded assessment of a laboratory report to interpret, analyze, and critique information by others. (Analysis of Quantitative Arguments)

3. Participate in a cumulative lab practical as a part of the final exam for the laboratory. The practical consists of presenting student with a set of devices and instruments, asking students to determine physical principles that can be tested with the device and analyzing the results of these tests.

(Application of Quantitative Models)

4. Participate in the assessment: Force concept inventory. Students will solve conceptual problems by use of physics concepts of force. (Problem Setting and Reasoning/Conclusion)

5. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition and Evidence Evaluation)

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning skills in this course, students will

1. Use the knowledge taught in lecture and laboratory to address and solve specific problems in physics. (Problem Setting and Evidence Acquisition)
2. Participate in an assessment, “Mechanics Baseline Test”. This test consists of solving physics problems in mechanics, to test students on basic physical principles in mechanics. (Problem Setting, Evidence Acquisition, Reasoning/Conclusion)
3. Students will evaluate certain problems, within lecture and laboratory, for their physical validity to learn to develop conclusions, solutions, and outcomes that reflect an informed, well reasoned evaluation. (Representation of Quantitative Information and Reasoning/Conclusion)
4. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition, Evidence Evaluation, Representation of Quantitative Information, and Analysis of Quantitative Arguments)

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To develop personal and social responsibility skills in this course, students will

1. Write a group laboratory report on an experiment in which they work together as a team. Student interaction within their group will be integral in this experiment. (Collaboration Skills and Teamwork)
2. Visit a food production plant and write notes on all possible physics applications on the processes in the plant. The notes will be analyzed and discussed. (Civic Discourse, Civic Knowledge, Evidence Acquisition, and Reasoning/Conclusion)
3. Read an article about unethical behavior in physics to evaluate the evidence and data for credibility. Students will write a report about this article in the framework of concepts learned in lecture and laboratory. Specific examples of error and fraud are to be addressed. This assignment will assess the ability of the students to recognize and mitigate unethical behavior in their own work and others. Ethical reasoning will be central to this assignment. (Ethical Reasoning and Evidence Evaluation)
4. Students will write an essay on the importance of physics infrastructure on civilization and society. (Sustainability and the Natural and Human Worlds)

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

FCI

Filename: FCI\_IErHOiF.pdf Size: 326.8 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000175**

Yang yang - yyang36@gmail.com

NM General Education Curriculum



Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Yang Yang
Title	College Physics Associate Professor
Phone	5756248481
Email	yang@nmml.edu

### Submitting Institution

Name of HEI	New Mexico Military Institute
Submitting Department	Science

### Chief Academic Officer

Name	Douglas J. Murray
Email	dmurray@nmml.edu

### Registrar

Name	Chris Wright
Email	Wright@NMML.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes



### Institutional Course Information

Prefix	PHYS
Number	2215
Title	Engineering Physics
Number of credits	5

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	MATH
Number	1510, 1520
Title (if applicable)	Calculus I and II

### New Mexico Common Course Information

Prefix	PHYS
Number	1310
Name	Engineering Physics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

A. Substantive Objectives: At the conclusion of this course, you will be able to

1. Demonstrate an understanding of the physical principles, such as Newtonian laws of mechanics, Newton's theory of gravitation, and fluid dynamics.
2. Know the symbol for the physical quantities covered, and know the physical quantity for which each symbol stands ;
3. Demonstrate an improved insight into the mechanical phenomena of the physical world, and have the knowledge of the technical terms used in the discussion of the phenomena studied.
4. Recognize the role that mechanics plays in many facts of our life and the responsibility of those who understand physics to contribute appropriately to their communities ;
5. Using the scientific method to conduct an experiment with modern laboratory equipment.

B. Skill Objectives: Upon completion of this course you will be able to

1. Apply principles of Newtonian mechanics to predict or calculate the translational motion of particles in one or higher dimensions using calculus.
2. Apply the principles of Newtonian mechanics to predict or calculate the rotational motions of particles using calculus.
3. Apply Newton's gravitational theory to circular motions and understand planetary motions or subatomic particle motions.
4. Apply work and energy principle to understand the energy transfer and solve the problem with kinetic energy and potential energy.
5. Apply Archimedes' and Bernoulli's principle to understand fluid dynamics based on Newtonian mechanics.
6. Apply a systematic approach to problem-solving by
  - a) Identify knowns and unknowns and set up strategies to solve the problem.
  - b) Using calculus to set up equations to solve unknowns involving derivative and integration.
  - c) Derive algebraic solutions using appropriate symbols for physical terms.
7. Solve problems involving reading or constructing a graph.
8. Applying mathematics of vectors to principles of physics.
9. Use Vernier Logger Pro units, LabQuests, computers, and/or the internet to gather, compile, and present information gathered experimentally ;
10. Use other laboratory equipment to experimentally verify mechanics concepts.

11. Complete the laboratory report that presents experimental data in a data table and includes an analysis of the experimental results. Complete the pre and post-lab questions.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

A. Substantive Objectives: At the conclusion of this course, you will be able to

1. Demonstrate an understanding of the physical principles, such as Newtonian laws of mechanics, Newton's theory of gravitation, and fluid dynamics.
2. Know the symbol for the physical quantities covered, and know the physical quantity for which each symbol stands ;
3. Demonstrate an improved insight into the mechanical phenomena of the physical world, and have the knowledge of the technical terms used in the discussion of the phenomena studied.
4. Recognize the role that mechanics plays in many facts of our life and the responsibility of those who understand physics to contribute appropriately to their communities ;
5. Using the scientific method to conduct an experiment with modern laboratory equipment.

B. Skill Objectives: Upon completion of this course you will be able to

1. Apply principles of Newtonian mechanics to predict or calculate the translational motion of particles in one or higher dimensions using calculus.
2. Apply the principles of Newtonian mechanics to predict or calculate the rotational motions of particles using calculus.
3. Apply Newton's gravitational theory to circular motions and understand planetary motions or subatomic particle motions.
4. Apply work and energy principle to understand the energy transfer and solve the problem with kinetic energy and potential energy.
5. Apply Archimedes' and Bernoulli's principle to understand fluid dynamics based on Newtonian mechanics.
6. Apply a systematic approach to problem-solving by
  - a) Identify knowns and unknowns and set up strategies to solve the problem.
  - b) Using calculus to set up equations to solve unknowns involving derivative and integration.
  - c) Derive algebraic solutions using appropriate symbols for physical terms.
7. Solve problems involving reading or constructing a graph.
8. Applying mathematics of vectors to principles of physics.
9. Use Vernier Logger Pro units, LabQuests, computers, and/or the internet to gather, compile, and

present information gathered experimentally ;

10. Use other laboratory equipment to experimentally verify mechanics concepts.

11. Complete the laboratory report that presents experimental data in a data table and includes an analysis of the experimental results. Complete the pre and post-lab questions.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Lecture, recitation exercises problems, quiz, exams, and associate labs will be given during the semester to develop critical thinking skills.

Problem Setting: Exercise problems, homework will be given after each lecture and students need to identify the components of the problem, find a method to solve the problem and draw a conclusion to the problem.

Evidence Acquisition: Students need to gather the evidence/knowledge learned in the past to solve the problem or answer a question. During the lab section, students should be able to gather information base on the physical principle and available laboratory equipment to support their conclusion.

Evidence Evaluation: Once the student solves the problem, they need to check the validity of the answer, solution or conclusion that obeys the physical laws. During the laboratory section, if a difference is made based on their conclusion, they should be able to find the uncertainty and find the factors that contribute to the discrepancy.

Reasoning/Conclusion: After the conclusion is drawn, the students should be able to validate their conclusion, for example, whether the application is doable base on other factors according to physics laws. During the laboratory section, students should have plans on how to improve the experimental method to get more accurate results.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Lectures, exercise questions, quiz, exams, and associated laboratory experiments will be given during the semester to develop this outcome.

Communication/Representation of Quantitative Information: By giving numbers to physical quantities, students should be able to derive/calculate the values of other physics quantities. For example, if a batter wants to hit the baseball back with the same amount of velocity within a certain amount of time, students should be able to calculate the impulse and forces needed to achieve this action by given the initial velocity, the mass of the baseball and time duration. During the laboratory section, students should be able to use modern equipment to gather quantitative information for certain physics quantity.

Analysis of Quantitative Arguments: Students should gather and interpret the information given in the question or raised in real life, and reasoning through by providing physical evidence to support the analysis. For example, in order to find the impulse and force the batter needed, the student should analysis the velocity and time, then find appropriate physics laws to solve the problem. During the laboratory section, students should analyze the data acquired using the equipment to derive or support their conclusion.

Application of Quantitative Models: Students should apply appropriate quantitative models to solve problems using quantitative information gathered with proper analysis and reasoning. For example, in order to find the impulse and force the batter needed, the student should use the relationship between impulse and momentum to calculate the answer. During the laboratory section, students should use appropriate physical models to draw conclusions using corresponding quantitative information acquired with scientific reasoning.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Collaboration skills, teamwork and value systems: Students will team up during the laboratory section to complete the task using physics concepts. During the two and half hours section, they should collaborate to finish collecting essential experimental data. After collecting the data, students should be able using appropriate physics models to analyze the experimental data. During the collaboration, they should team up to contribute their thought and time to draw a solid conclusion using the scientific method. Also, projects will be given during the semester which they will collaborate and team up to research on certain topic or projects. During the lecture section, they will also team up to work on problems or discuss answers to relevant social questions.

Sustainability and the natural and human worlds: Students should use the appropriate physics laws to understand the consequence of certain human action or understand the rules set up by human society to regulate the behavior. For example, by understanding Newton's three laws, they should know the importance of wearing a seat belt for both the driver and passengers. Also, by understanding circular motion and friction coefficient, they should drive slowly when making turns on the road and pay extra attention when it is raining or snowing.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### assessment file

Filename: assessment\_file.pdf Size: 535.6 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000042

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

In Progress - Last edited: Mar 12 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility

5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Kennedy Alila
Title	Professor of Chemistry
Phone	575-492-2803
Email	kalila@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu



**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	CH
Number	114A
Title	General Chemistry/Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	CHEM
Number	1215C
Name	General Chemistry I Lecture and Laboratory for STEM Majors

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Listed below are a set of student learning outcomes tied to the course lecture and laboratory for CHEM 1215C, as a combined credit course. They help assess the student's understanding of the learning processes and the necessary course-skill acquisition during the learning process.

#### Lecture Student Learning Outcomes

1. Use dimensional analysis, the SI system of units and appropriate significant figures to solve quantitative calculations in science.
2. Explain the structure of atoms, isotopes and ions in terms of subatomic particles.
3. Understand the differences between physical and chemical changes to matter, and utilize the IUPAC system of nomenclature and knowledge of reaction types to describe chemical changes, predict products and represent the process as a balanced equation.
4. Apply the mole concept to amounts on a macroscopic and a microscopic level and use this to perform stoichiometric calculations including for reactions in solution, gases and thermochemistry.
5. Apply the gas laws and kinetic molecular theory to relate atomic level behavior to macroscopic properties.
6. Describe the energy conversions that occur in chemical reactions and state changes, relating heat of reaction to thermodynamic properties such as enthalpy and internal energy, and apply these principles to measure and calculate energy changes in reaction.
7. Use different bonding models to describe formation of compounds (ionic and covalent), and apply knowledge of electronic structure to determine molecular spatial arrangement and polarity.
8. Analyze how periodic properties (e.g. electronegativity, atomic and ionic radii, ionization energy,

electron affinity,  
metallic character) and reactivity of elements results from electron configurations of atoms.

#### Laboratory Student Learning Outcomes

1. Demonstrate and apply concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value with the correct units, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Prepare solutions with an acceptable accuracy to a known concentration using appropriate glassware.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Demonstrate mastery in experimental techniques, such as pressure measurements, calorimetric measurements, and spectrophotometric measurements.
7. Draw conclusions based on data and analyses from laboratory experiments.
8. Present experimental results in laboratory reports of appropriate length, style and depth or through other modes as required.
9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
10. Design experimental procedures to study chemical phenomena.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

This will involve challenging the intellectual learning process through meaningful scientific inquiry.

Students will

characterize the scientific problem, state, and describe the issue through critical questions relevant to the concept.

Students may be asked to formulate or design on theoretical and/or experimental scientific issue of interest; create a concept plan; and/or identify a strong position of a scientific argument.

Students will be actively and practically engaged in performing laboratory experiments related to lectures or provide a critical look at theories and evidence on issues of interest. The central concept will revolve around the role of atoms in any phenomena. They will be required to make observations and gather any qualitative or quantitative data bearing in mind the importance and practice of laboratory safety.

Students will then be required to evaluate their own data for falsifiability or verifiability which may include personal

awareness of the process and assumptions they may make. They will also be required to support the credibility of

their data or justify errors or assumptions made in the process.

Students will then reflect on relevant outcomes and develop relevant conclusions based on their data.

Any

discrepancies will need justifications by negative or positive reasoning.

Assessment of these outcomes will be through the course textbook online homework and in-class proctored tests.

Students will be asked to Analyze, demonstrate, apply, determine, draw, manipulate, or show conceptual relevance

through written tests. The laboratory assessment will be through actual experimental design and performance. They will investigate, observe, record, interpret, or, analyze their findings. Tests may/will also be reflective based on a previous lab activity in relation to a lecture to evaluate their translation of a scientific critical thinking concept in written narrative form.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Both Lecture and Laboratory components of General Chemistry I for STEM majors provide a wide scope of topics that require quantitative analysis and reasoning. Students are required to communicate or express given quantitative information in written or oral format through tests, laboratory reports or some form of presentation. Students will represent data they have gathered in the most appropriate forms like tables, charts, or graphs and relate to their quantitative relationships. Students will be required to show proficiencies in translations and integration of quantitative outcomes on their homework, written test materials, or laboratory reports.

Students will also be required to be able to consider quantitative arguments from other sources. They should be able to critique, differentiate, and identify emerging skills presented by other sources, and compare with their own if any before drawing conclusions. Use of appropriate techniques of skill developments of mathematical proof or statistical analysis is highly emphasized. In some cases where applicable, they apply relevant quantitative models to real-world issues. This will require classification or description of quantitative information where applicable.

Assessments of the learning process will focus on matter and energy interconversions and manipulations of

quantitative calculations through dimensional analysis; deep understanding and applications of the mole concept and mass relationships at different concept levels. Laboratory component will focus on safety, demonstration of

computational of observation and mathematical skills. Will be required to be able to prepare accurate concentration

of solutions for quantitative determinations (Gravimetric and volumetric), calorimetric, and spectrophotometric

measurements. Some tests will be reflective based on a previously completed laboratory activity.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The course requires that students make connection and describe personal and social-ethical choices or actions in their decision making process either as an individual or when working collaboratively. They will develop strategies that help them evaluate issues by comparing and contrasting solutions across social and cultural relationships in their reports or presentations.

They will then illustrate the impact of their decision making in a sustainable way through ethical reasoning. During

concept reviews and laboratory activities, students will be required to give personal input while working collaboratively on issue through shared obligations They will present a diverse view on issues, demonstrate ability in civic dialogue on issues local or global.

Assessment will be based on issues that involve chemistry and the world. For example: students will perform lab

activities such as detection of water contaminants through spectrophotometric measurements and relate the impact

of contaminants to personal or global life. Their tests, homework, or debate problems will estimate and discuss the

socio-economic impact of air pollution through unregulated release of certain pollutants from use of hydrocarbon

fuels. Many other areas of similar connections to relevant outcomes will be considered.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 12 2019



### Upload Assessment

Completed - Mar 12 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## CHEM1215C Sample Test Questions

Filename: CHEM1215C\_Sample\_Test\_Questions.docx Size: 13.0 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000200

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on



essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Roene Neu
Title	Professor of Geology
Phone	5754922813
Email	rneu@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	GE
Number	114
Title	Physical Geology
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	GE
Number	114L
Title (if applicable)	Physical Geology Lab

## New Mexico Common Course Information

Prefix	GEOL
Number	1110C
Name	Physical Geology Lecture & Laboratory

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

### Lecture Student Learning Outcomes:

1. Recall, describe or explain geologic vocabulary.
2. Identify or explain aspects of the geologic time scale and compare the uses and limitations of relative and absolute dating.
3. Recognize or explain the evidence used to support the theory of plate tectonics. Describe or identify how plate tectonics is related to the structure and features of the Earth.
4. Describe the formation of, and describe, compare, and classify minerals.
5. Identify or describe the three main rock types, how each forms in the context of the rock cycle and what each indicates about its environment of formation.
6. Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.
7. Describe or discuss the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
8. Recognize or describe the geologic processes involved in the formation and concentration of geologic resources.

### Lab Student Learning Outcomes

1. Use physical properties to identify mineral specimens.
2. Describe, classify, and identify igneous, sedimentary, and metamorphic rocks and their textures.
3. Utilize the principles of stratigraphy to provide an explanation of the geologic history portrayed in a photograph or cross-section.
4. Explain how contour lines are used to represent topography, use map scales to measure distances on the ground, and construct topographic profiles.
5. Identify landforms from images and topographic maps.
6. Interpret geologic maps and construct geologic cross-sections.
7. Acquire and communicate scientific data, ideas, and interpretations through written, oral, or visual means. Examples may include creating and describing graphs, maps and photos.
8. Apply critical thinking skills such as inductive, deductive, and mathematical reasoning to solve geological problems.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical Thinking skills are developed through classroom activities, homework assignments, and lab exercises. All labs require critical thinking skills in which students are required to make observations, this may be of rocks, minerals, diagrams, maps, and figures. They then use these observations to solve geological problems presented to them. An example of this will be with the mineral identification lab. Students are presented with a set of some of the more common minerals found in the earth's crust. The minerals are unknown to the students, so they begin with evidence acquisition by testing for physical properties (color, hardness, luster, cleavage/fracture, streak color, etc.) and making observations of the minerals which they record in their lab manuals. Students then practice evidence evaluation by using this collected data with identification tables to identify the mineral samples. Some properties like hardness, for example, will only yield ranges, students will need to use reasoning to make a final conclusion on the mineral names. Students then conclude the lesson with a discussion/write-up on how some of these minerals may be used in their homes.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning is essential in for solving problems in geology. Students focus on methods for quantitative data exploration and hypothesis testing with many of their lab assignments. Students are often required to use mathematical skills to analyze and interpret real-world quantitative information in the context of a geology to draw conclusions that are relevant to students in their daily lives. For example, students use these skills to interpret and understand deep time by calculating a metaphor of geologic time to their own age as Eicher did with a calendar year to assist students in understanding in a more concrete way the difference between 100 years and 1 billion years. Students additionally use quantitative reasoning to determine the ages of rocks through the application of radioactive decay.

Students communicate or represent quantitative data through several means including graphing, modeling and even written discussions. Students analyze quantitative data to understand real-world problems. For example, students calculate and study porosity and permeability percent of various materials in part to understand discharge, recharge, and groundwater movement. Students are then able to use quantitative models created from data sets to understand changes in groundwater levels, flow directions, and the movement of contaminants. The use of quantitative analysis, models, and communication of this data is applied to weekly lab assignment. In classroom lectures/discussions diagrams, charts, and graphs are all analyzed and students understanding of the material is evaluated on chapter exams.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and social responsibilities are large part of the course. Both lectures and lab involve discussion of our interactions with and impact on our planet from a geological context. Students become aware as concerned citizens of how fragile our planet is and how interdependent all of its various systems and subsystems are. Students are learning how pollution in our environment impacts the earth and how limited natural resources are, and how geologic events such as earthquakes, tsunamis, volcanoes etc. are central to our everyday lives.

In labs students work in pairs or small groups dependent on the day's lab activity, where they work on key skills like communication, collaboration, and teamwork. Several labs are on sustainability and conservation of natural resources, for example groundwater and surface water labs. In lecture students partake in group discussions in the classroom, but also in our online learning system. Where students are assigned to post discussions on topics related to lecture, such as an introductory discussion on "How geology impacts our everyday lives".

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## SampleassessmentPhysicalGeology

Filename: SampleassessmentPhysicalGeology.pdf Size: 839.2 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000027

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



Application Form

Completed - Mar 13 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility



6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
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### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	CHEM
Number	1120
Title	Introduction to Chemistry (non majors)
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	CHEM
Number	1120L
Title (if applicable)	Introduction to Chemistry (non majors)

### New Mexico Common Course Information

Prefix	CHEM
Number	1120
Name	Introduction to Chemistry (non majors)

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:

<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements
2. Identify elements from their name or symbol, use the periodic table to describe reactivity patterns of elements and to predict compound formation.
3. Describe the basic structure of an atom using subatomic particles, and apply these concepts to nuclear reactions.
4. Describe ion formation and the difference between covalent and ionic compounds. Name and write formulas for ionic and simple molecular compounds.
5. Write and balance chemical reactions. Use balanced reactions in stoichiometric calculations.
6. Describe the differences between the solid, liquid and gas phases. Use the gas laws in calculations, and apply these laws to everyday situations.
7. Explain different types of energy, and how energy is released or absorbed in a reaction
8. Describe acid and base behavior and the nature of buffer solutions.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

In this course, students focus on applying scientific theories and observations covered in lecture such as the atomic theory, periodic table, writing chemical formulas, and stoichiometry. They conduct laboratory experiments on the different concepts covered in lecture where they define the problems they are addressing, acquire evidence and record observations. They evaluate the data and draw conclusions based on the supporting evidence and calculations. Student's critical thinking skills are developed through conducting these laboratory experiments and writing laboratory reports. Class discussion participation, homework assignments, and in-class examinations also develop and assess critical thinking skills.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students apply quantitative models by using formulas and chemical equations using the proper problem solving technique. Students work in groups as teams in the chemistry laboratory where they engage in discussion regarding their cooperation in running the experiments in the best and efficient way. Students communicate and represent quantitative information to their team in various forms (tables, graphs, calculations) during their experiments and in their laboratory reports. Students analyze and evaluate their own and each other's work and draw conclusions based on the evidence presented by their data. They present their work in a written laboratory report.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students relate the learned concepts to environmental, health, and industrial issues (sustainability and ethical reasoning). This is done through class discussions where they argue their points orally by presenting supporting evidence on such issues. Students are assessed on participation in these class discussions.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 10 2019



### Upload Assessment

Completed - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### chem 1120 assignment

Filename: chem\_1120\_assignment.pdf Size: 52.1 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000067

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy

2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	575-769-4753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	ENG
Number	202
Title	Types of Literature/Short Story
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)



## New Mexico Common Course Information

Prefix	ENGL
Number	2380
Name	Introduction to Short Fiction

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Read a selection of fictional work.
2. Identify literary devices of short fiction, such as plot, character, setting, point of view, and theme.
3. Use critical approaches and engage in discussions to analyze fiction.
4. Define the strength and limitations of short fiction forms.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Analyze selected contemporary texts and contexts and the lives of the authors and look at the connection between them.
2. Prepare and deliver polished and carefully edited examples of creative writing with the inclusion of the short story elements.
3. Engage in a respectful dialogue with their peers.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Across the semester, students will be introduced to a variety of literary works and authors, and during class discussions, research, and essay writing, students will learn to analyze, reflect, compare and contrast, and additionally identify literary devices. They will also acquire knowledge about contextuality between the texts and the world as the authors saw and experienced it in the areas of politics, culture, history, gender, race, and location, and compare and contrast readings that address the same subject matter, but were written in different times. Students will learn to examine texts and to look "beneath the surface" to discover the elements and literary devices that create a short stories. Students will recognize the importance of using reliable sources and quotations, paraphrases, and examples from the text to support their observations and insights, and gain skills to implement those sources. Students will be introduced to the universal character of many short stories and draw connections and relations between them.

Students will engage in a respectful and meaningful Civic discourse during their writings and discussions

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses **2** of the components of personal & social responsibility. 200 – 300 words.*

With the use of readings, discussions, writing, and film, students will explore the effects of human behavior and actions across the semester. They will learn about the connection between cause and effect and engage in respectful and kind Civic discourse to discuss and support their findings in research-based writings. Students will also explore, reflect, compare/contrast (on) their own lives, and draw conclusions that will empower them to make positive changes and/or understand the world around them better. The required activities like reading, discussion, and writing will also familiarize them with them behavior of humanity and encourages them to look deeper into social, cultural, and societal construct and the way they shape human behavior throughout history. Students will observe that literature acts as a mirror for society, relationships, human behavior, politics, historical, scientific and natural events, and for the entire development of humanity.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses **3** of the components of digital literacy. 200 – 300 words.*

Across the semester, Students will be ( re-)introduced to our college’s library database that offers academic, reliable sources (e-Books, electronic articles, and electronic reference works) and resources. They will also watch a video created by one of our librarians that explains how the data website works. Different writing and discussion assignments require research and the documentation of reliable sources that they used; that way students familiarize themselves with our available sources. Students will also learn to use videos and, speeches that they found online, online tutorial support like Purdue Owl and Brainfuse, and to create their own videos where they reflect and analyze (on) works like literature and movies. For their final assessment, students will create a video where they display the skills (Information and Digital Literacy, Social responsibility, and Critical Thinking Skills) and SLOs they have gained.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 19 2019



#### Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### ENG 202-ENGL 2380 Rubric and Instructions

Filename: ENG\_202-ENGL\_2380\_Rubric\_and\_Instructions.pdf Size: 87.8 kB



#### Upload Rubric

Completed - Mar 19 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### ENG 202-ENGL 2380-Online Syllabus

Filename: ENG\_202-ENGL\_2380-Online\_Syllabus.pdf Size: 472.3 kB

### Application: 0000000176

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



#### Application Form

Completed - Mar 20 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	GG
Number	113
Title	World/Regional Geography
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	GEOG
Number	1120
Name	World Regional Geography

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Identify, describe, illustrate, distinguish among or explain the basic concepts of geography, the major world regions, areal differences and similarities, the processes that shape geography natural and human, the use of maps, and the key topics of geographical interpretation (e.g., location, world importance, population, political status, resources, etc.).
2. Identify, describe, illustrate, distinguish among or explain the regional groups of Europe, its historical background, its languages and religions, major features, the diversified economy, political structures, and impact on globalization.
3. Identify, describe, illustrate, distinguish among or explain the regional groups of Russia and its satellite nations, its historical background, their languages and religions, major features, their diversified

economies, political structures, current problems, and impact on globalization.

4. Identify, describe, illustrate or explain the regional nations of Middle East, their historical background, their languages and religions, the major features, the diversified economies and political structures, the current problems
5. Identify, describe, illustrate, distinguish among or explain the regional groups of Asia, their historical background its languages and religions, major features, the diversified economy and political structures, current problems, and impact on globalization.
6. Identify, describe, illustrate, distinguish among or explain the regional groups of the Pacific World, their historical background its languages and religions, major features, the diversified economy and political structures, current problems, and impact on globalization.
7. Identify, describe, illustrate, distinguish among or explain the regional groups of Africa, their historical background its languages and religions, major features, the diversified economy and political structures, current problems, and impact on globalization.
8. Identify, describe, illustrate, distinguish among or explain the regional groups of Latin America, their historical background its languages and religions, major features, the diversified economy and political structures, current problems, and impact on globalization.
9. Identify, describe, illustrate, distinguish among or explain the regional groups of Anglo-America, their historical background its languages and religions, major features, the diversified economy and political structures, current problems, and impact on globalization.
10. Collect data to analyze or classify the region various historical developments and trends relating to globalization.
11. Apply critical thinking skills in predicting future developments and impacts in economics, cultural diversity, and political stability globally.
12. Recognize and discuss current political “hot-spots,” their causes, and potential results with regards to globalization.
13. Synthesize information the data into a comprehensive world-view. supporting points logically.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A



## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting: I Students will understand, identify, describe, and distinguish among the regional groups in the world by gathering and evaluating evidence from multiple sources: historical, political, economic, and cultural through lectures, virtual field trips, cartographic study and evaluation, current events, documentary films and group activities.

Evidence Evaluation:

Throughout the course the student will participate in group map games and trivia quiz bowls to demonstrate their abilities to identify and describe the various regions of study while applying their understanding of the five themes of geography to each region. There are three research projects throughout the course based on topics and themes that are assigned and self-selected where the student must collect data and evidence, analyze and then synthesize the information into a comprehensive view which is supported logically and appropriately. Presenting research in the classroom and online for peer review and discussion accompanies each project.

Reasoning/Conclusion:

The student will apply their understanding to the historical developments of the regions in order to recognize potential and current developments and impacts on cultural diversity, political stability, and environmental concerns globally. In addition to quizzes and exams, the research projects and group activities and formal essays provide assessment which is accompanied by the assignment rubric.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: One of the major issues studied in the course is water. Students look at the global water crisis, water policy and privatization, public health issues related to water, and how their individual water habits and usage impacts the water cycle locally, regionally, nationally, and globally. Students develop their ethical reasoning skills with research and the application of data, evidence, and regional information to the complex moral component of the geographical issues that confront our present world. Students further develop their sense of responsibility with a group project on genocide.

Ethical reasoning: . Through the study of the physical, historic, and cultural developments of their assigned regions, students will research and present on an occurrence of genocide in the past and apply their understanding to identifying potential areas of crisis where a genocide may occur (“hot-spots”).

Students are asked to apply ethical systems and thinking to issues, such as water rights and genocide.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact and work on teams. Students will also expand their sense of Personal and Social Responsibility through an experiential learning activity that focuses on our campus environment in celebration of Earth Day. Participation in the activity is mandatory but the assessment is self-directed. Through reflective writing post-activity, the student is able to demonstrate their knowledge and engagement in a personal way that also impacts the campus community.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Instructors use Library Resources to educate Students about the Library, its resources, and the benefits of using the Library to conduct research over generic search engines such as Google or Chrome. Standards and methods of MLA and APA formatting are presented and in multiple assignments students are required to gather and present their research according to those standards. Topics such as credibility, copyright, intellectual property and fair use are presented and discussed in preparation for the research assignments.

Digital Literacy: Produced with computers and electronic research resources, Annotated Bibliographies are compiled on topics both assigned and chosen in order to demonstrate the students' abilities to gather evidence from various sources, evaluate the credibility and relevance of source materials, summarize and order source materials correctly for research purposes. Gathering and summarizing multiple primary source readings from various perspectives allows

students the opportunity to demonstrate their abilities to evaluate credibility and relevance of source materials in order to obtain a multi-faceted understanding of the regions of study

Information Structure: Students present their group research in class and online for peer review, where multiple media resources are emphasized. Almost every course assignment or activity is assessed by the Instructor using a rubric with a component that addresses these skills. Exercises utilizing Google Earth and Google Maps are utilized and GIS as an academic discipline is also explored and studied as one of the trends in modern geographical studies.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided evidence.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 20 2019



### Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## GEOG Sample Assignment

Filename: GEOG\_Sample\_Assignment.docx Size: 12.6 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000199

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

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## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Roene Neu
Title	Professor of Geology
Phone	5754922813
Email	rneu@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	GE
Number	214
Title	Introduction to Meterology
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	GE
Number	214L
Title (if applicable)	Introduction to Meterology Lab

## New Mexico Common Course Information

Prefix	GEOL
Number	2130C
Name	Introduction to Meteorology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

### **Student Learning Outcomes**

1. Recall, describe, or explain the various elements of the Earth's atmosphere, Earth's relation to the sun, incoming solar radiation, the ozone layer, the primary temperature controls, and the unequal heating of land and water.
2. Recall, describe, or explain weather variables and parameters.
3. Recall, describe, or explain air masses, pressure systems, the various fronts and associated types of storms, weather symbols, monsoons, the various forms of precipitation, along with causes and effects of lightning.
4. Recall, describe, or explain the hydrologic cycle, the characteristics and influences of the oceans and continents on the weather, the Southern Oscillation (i.e., El Nino), and the effects of land/water distribution.
5. Recall, describe, or explain specific impacts by humans on weather, climate, and on the ecosystem at large.
6. Evaluate and interpret information from maps, diagrams, remote sensing devices, graphs, and tables.
7. Apply critical thinking skills such as inductive, deductive, and mathematical reasoning to solve problems using the scientific method.
8. Recognize and discuss the effect of human activity on climate, climate change and the greenhouse effect.
9. Synthesize information from external, current sources and personal observations and discuss their relationships to class material.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A



## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Critical Thinking skills are developed through activities, homework assignments, and lab exercises. All labs require critical thinking skills in which students are required to make observations, this may be of surface and air pressure patterns, surface weather maps, weather satellite imagery, air pressure changes, precipitation patterns, thunderstorms and much more. An example would be with the surface weather maps and forces assignment in which students are to demonstrate the impact of Earth's rotation on horizontally-moving objects, a Coriolis effect. Students are instructed on how to create a rotating card device to demonstrate this. They are then directed to complete a set of activities where they acquire data, they then evaluate, and draw conclusions from. In every lab they are required to acquire data from diagrams/figures, maps, or graphs, that they then need to evaluate, and use to develop a reasoning or conclusion on the subject.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning is essential for solving problems and understanding oceanography. Students focus on methods for quantitative data exploration and hypothesis testing with many of their lab assignments. Students are often required to use mathematical skills to analyze and interpret real-world quantitative information in the context of oceanography to draw conclusions that are relevant to students in their daily lives.

Students communicate or represent quantitative data through several means including graphing, modeling and even written discussions. Students analyze quantitative data to understand real-world problems. For example, students complete an investigation on surface weather maps would be required to decode the symbols commonly appearing on the surface weather map and describe weather conditions at various locations. Students also acquire data appearing on maps and then analyze this data to identify fronts appearing as well as communicating the weather that is likely to be occurring on either side of the front and the motion of the fronts, and lastly describe general relationships between wind patterns and the high and low air pressure centers shown on the weather maps.

The use of quantitative analysis, models, and communication of this data is applied to weekly lab assignment. In class lectures/discussions diagrams, charts, and graphs are all analyzed and students understanding of the material is evaluated on chapter exams.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and social responsibilities are large part of the course. Several topics have a discussion of human impact on meteorology (such as principal air pollutants, regulation of CFC's and the Montreal Protocol, and how climate change is impacting agriculture). With weather being an inevitable part of everyone's lives students are not only introduced to the means to understand and predict possible weather outcomes students are made aware through labs and discussion the life-shattering consequences of hurricanes or tornados, and the ever-changing picture of naturally occurring events from drought to devastating floods. Students through discussion, communicate and listen to perspectives on weather from students of a range of social, cultural, and regional backgrounds in this way intercultural reasoning and intercultural competence is applied.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 21 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

SampleAssessmentMeteorology2

Filename: SampleAssessmentMeteorology2.pdf Size: 867.6 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000028

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



Application Form

Completed - Mar 12 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

## Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

## Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

## Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	CHEM
Number	1215
Title	General Chemistry I for STEM Majors
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	CHEM
Number	1215L
Title (if applicable)	General Chemistry I for STEM Majors Laboratory

**New Mexico Common Course Information**

Prefix	CHEM
Number	1215
Name	General Chemistry I for STEM Majors

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Use dimensional analysis, the SI system of units and appropriate significant figures to solve quantitative calculations in science.
2. Explain the structure of atoms, isotopes and ions in terms of subatomic particles.
3. Understand the differences between physical and chemical changes to matter, and utilize the IUPAC system of nomenclature and knowledge of reaction types to describe chemical changes, predict products and represent the process as a balanced equation.
4. Apply the mole concept to amounts on a macroscopic and a microscopic level and use this to perform stoichiometric calculations including for reactions in solution, gases and thermochemistry.
5. Apply the gas laws and kinetic molecular theory to relate atomic level behavior to macroscopic properties.
6. Describe the energy conversions that occur in chemical reactions and state changes, relating heat of reaction to thermodynamic properties such as enthalpy and internal energy, and apply these principles to measure and calculate energy changes in reaction.
7. Use different bonding models to describe formation of compounds (ionic and covalent), and apply knowledge of electronic structure to determine molecular spatial arrangement and polarity.
8. Analyze how periodic properties (e.g. electronegativity, atomic and ionic radii, ionization energy, electron affinity, metallic character) and reactivity of elements results from electron configurations of atoms.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

In this course, students develop their critical thinking skills through a number of practice problems and homework assignments as well as how to define a problem in the laboratory where they acquire evidence through measurements and observations. Students evaluate their evidence through calculations and data analysis and develop conclusions based on their findings. Students present their experiments outcome in laboratory reports. Their assignments requires them to evaluate the evidence, reasoning, and conclusion.

### **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students apply quantitative models by using chemical equations and formulas, giving answers in the correct forms following the proper problems solving techniques. Students analyze quantitative arguments as they evaluate each other's work, identifying mistakes and discussing how to correct them. Students communicate and represent quantitative information in their teams as they work together to complete laboratory experiments and document their work in laboratory reports. Students are evaluated by homework assignments, class participation, examinations, and laboratory reports.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students choose a case study project on real life issues such as environmental and health related problems (sustainability). They develop teamwork and collaboration skills as they work as a team and discuss the best way of collaboration between them. Students submit their chosen topic of the planned investigation along with the proper technique and evidence acquisition process. They evaluate the acquired evidence. Students submit a written report on their projects as well as orally present and evaluate their reasoning and draw conclusion where students explain how the environment can be protected. Assessment is done by how well they work as a team, and grading rubric. The oral critique of other students is also part of the evaluation.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 10 2019



Upload Assessment

Completed - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

CHEM 1215 assignment

Filename: CHEM\_1215\_assignment.pdf Size: 43.2 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000084

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	575-769-4753
Email	janett.johnson@clovis.edu

## Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

## Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	ENG
Number	203
Title	Types of Literature/Novel
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	2370
Name	Introduction to the Novel

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Read a selection of fictional works.
2. Identify literary devices of long fiction, such as plot, character, setting, point of view, and theme.
3. Use critical approaches and engage in discussions to analyze fiction.
4. Define the strengths and limitations of long fiction forms.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Analyze selected contemporary texts, social contexts of origin and reception, and the lives of authors, and examine the connections and intersections.
2. Analyze the social discourses and knowledge in novel forms.
3. Engage in respectful and exploratory dialogue with peers.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will examine the novel genre and analyze how the form uniquely communicates about life, culture, and ideals across the semesters. Students will also read and consider the rhetorical dimensions of novels. Students will also connect and contrast novels with other forms, like epic poems and story anthologies. During class discussions, research, and writings, students will learn to analyze, reflect, compare, and contextualize the novels and criticism read in class across the semesters. Students will also learn about the authors' lives and the influence of politics, culture, religion, history, gender, race, and local geography upon works. Students will analyze works of similar nature but produced in different eras, and learn to contrast and contextualize those works. Students will encounter human commonalities as expressed in the characterization of novels, and then students will be asked to draw connections to their own lives and the current cultural, material and psychological circumstances of those lives. Students will be required to participate in civil discourse about their readings, expressing themselves with kindness and respect for one another and readers, through class discussions, writing, and research.

***Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Through readings, reflection, discussions, and creative engagement, students will explore individual and social behavior and discourse as encountered in novels across the semesters. Students will examine novels as literature and as personal and social discourse, and explore the causes and effects of said discourse in social and political settings. Students will engage in respectful observation, analysis, and discussion of novels and critical works. Students will explore the personal and social possibilities presented by novels and reflect upon those, applying ideas and perspectives on their own lives, enabling them to understand new options and consider changes to their own personal and social behavior. Through readings, discussions, and writing assignments, students will engage with the experience of the many different eras and places of those novels. Such engagement will empower them to analyze the way cultural discourse and social forces have shaped human behavior and imagination over time.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

In this course across the semester, students will be exposed to and required to use a range of digital platforms and media sources, for example: YouTube video clips, subject related websites, and a host of other digital venues to reinforce visually the contextual basis of ideas, events, and trends discussed during the course of this class. Students will learn basic computer skills, technological steps, and platform skills to access a course shell within Canvas in all classes as well as listen to and observe specially-created recorded lectures by the instructor using Camtasia digital video technology. Also, within the Canvas course shell, students will also utilize exam and quiz study guides, practice quizzes, written assignments, and student-driven threaded discussions questions that allow interaction with fellow classmates and the instructor. Students will also learn to access reliable and credible sources for their research and will use the online academic resources offered by our campus library, like Ebscohost, Academic Search Premier, Viewpoints, etc.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**ENG 203-ENGL 2370 Syllabus and Rubric**

**Filename:** ENG\_203-ENGL\_2370\_Syllabus\_and\_Rubric.pdf **Size:** 203.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000069

Heather Davis - hdavis@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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# Deadline for Next Curriculum Committee Meeting

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## Contact Information

Name	Heather Davis
Title	Professor of Biology
Phone	5754922809
Email	hdavis@nmjc.edu

## Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Biology

## Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	NU
Number	103
Title	Pathophysiology I
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	BIOL
Number	2510
Name	Pathophysiology I

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Student Learning Outcomes:

1. Describe the pathophysiology of cellular adaptation, injury and death.
2. Describe the cellular and pathophysiologic basis of anemia.
3. Describe the cellular and pathophysiologic basis of genetic diseases.
4. Describe the cellular and pathophysiologic basis of diseases of the neoplasms and white blood cell malignancies.
5. Describe the cellular and pathophysiologic basis of diseases of the brain and nervous system diseases.
6. Describe the cellular and pathophysiologic basis of diseases of the special senses.
7. Describe the cellular and pathophysiologic basis of musculoskeletal and joint diseases.
8. Describe the cellular and pathophysiologic basis of integumentary diseases.
9. Describe the mechanisms of inflammation and immunological protection against infectious diseases.
10. Describe diseases of the immune system, including hypersensitivity reactions, autoimmunity and immunodeficiency diseases.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The concept of scientific inquiry is reinforced throughout the semester primarily with case studies. This strengthens students' ability to critically think via problem-solving assignments. Case studies are part of every chapter covered and each requires the student to perform problem setting, evidence acquisition, evidence evaluation, and/or reasoning. Students are provided information for a certain situation. The student then has the opportunity to develop their critical thinking skills by identifying clinical manifestations, analyzing abnormal clinical laboratory data, assessing risk factors for different disorders, deciding on a diagnosis and/or developing appropriate disease management strategies. Case studies are done in groups, individually, as entry/exit tickets as students enter/leave class, as homework, and are embedded in each unit exam. As the semester progresses, students will also be required to develop a case study over a particular disease. This case study will be answered and critiqued by two other students in the course as well as evaluated by the instructor.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

The concept that students need to be able to communicate conclusions drawn from interpretation of quantitative data and to relevantly apply this information to the real world is stressed in class discussions, presentations, and case study assignments. During class discussions, charts and graphs are analyzed throughout the learning unit and students' skill level is evaluated by questions related to these charts and graphs on the unit exam. Examples of the topics discussed are general adaptation syndrome, HIV/AIDS classification system, concentration of blood cells, Glasgow coma scale, Mono-Kellie hypothesis, and normal lab values.

When case studies are completed in groups or individually, students will use tables of clinical laboratory reference values, such as normal white blood cell count, to evaluate collected data from the case study. The groups will communicate their conclusions and analysis of the patient's data to one another and to the class as a whole.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The concepts of recognizing our individual roles and roles others have in our diverse world to emphasized at two different levels: cooperative learning through group presentations and discussions embedded within the lecture. Students will be place in groups and assignment two diseases from the chapter, e.g. osteoarthritis and rheumatoid arthritis. The group constructs a Venn Diagram to demonstrate the similarities and differences and present their findings to the class. Groups are also given a topic or question from the chapter to teach to the class. This teaming and flipped classroom approach provides students with the opportunity to work in a more diverse environment that emphasizes collaboration. A rubric is used to assess group presentations.

Additionally throughout the course, classroom discussions include topics such as ethical and cultural considerations when addressing and treating patients, gender differences, and myths or misconceptions about cancer, HIV/AIDS, brain function, osteoporosis, fibromyalgia, birthmarks, and acne. Reinforcing the need of communication between colleagues, medical personal and patients as well as the general public.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 14 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Class Activity - Case Studies (Ch 12)

Filename: Class\_Activity\_-\_Case\_Studies\_Ch\_12.docx Size: 16.6 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000021**

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



Application Form

Completed - Mar 12 2019

## Application Form

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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Social Science and Humanities

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	PSYC
Number	1110
Title	Introduction to Psychology
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	PSYC
Number	1110
Name	Introduction to Psychology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility



## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Upon completion of the course students should be able to:

1. Explain how the scientific method and psychological research methodologies are used to study the mind and behavior.
2. Recall key terms, concepts, and theories in the areas of neuroscience, learning, memory, cognition, intelligence, motivation and emotion, development, personality, health, disorders and therapies, and social psychology.
3. Explain how information provided in this course can be applied to life in the real world.
4. Identify the major theoretical schools of thought that exist in psychology as they relate to the self, the culture, and the society.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Genre and Medium Awareness, Application and Versatility: In this course students interact with course material and communicate their knowledge in a variety of genres and media, including in-class oral discussions and on-line small group written discussions, written responses to core questions keyed to textbook chapters, reading and reviewing articles in the field, and viewing and reviewing video presentations and Ted Talks. Students also complete brief biweekly quizzes and orally present to the whole class a completed self-change project. For example, students are tasked with identifying real world examples of behavioral principles and to share their examples through discussions so that the entire class may evaluate and identify the examples. Additionally, students complete a variety of self-assessments found on websites.

Strategies for Understanding and Evaluating Messages and Evaluation and Production of Arguments: Students are introduced early in the course to core psychological theories and viewpoints and practice applying these theoretical lenses to explain, describe, and predict human behavior, such as altruism and aggression. Through small group discussions, class-wide debates, and written responses to short answer questions, students evaluate scholarly journal articles and more popular sources as they present various positions on issues such as nature-nurture, corporal punishment, and drug treatments, among others. For example, students are asked to respond to various prompts such “All psychology is cultural” and “ All culture is psychological.” One of the key goals of the course is to teach students to think and to communicate as psychologists do. They practice doing so through class discussion, which is informally assessed, and through a self-change project that requires careful analysis and application of behavioral modification to a self-identified habit they wish to change. They present their work, which includes required graphs and figures, both in written format and orally.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting and Evidence Acquisition: Students identify various perspectives in psychology and views on key issues and controversies in the field such as the nature of science and pseudoscience, memory reconstruction, and the role of socioeconomic status, culture, and gender on how psychologists frame their research problems and decide on the methods they utilize. In doing so, they also become aware of how their own contexts impact how they interpret research. Students also frame a problem by identifying a maladaptive personal habit they wish to change in preparation for the self-change paper. In doing so they identify and gather the information/data necessary to address the problem and to plan a solution.

Evidence Evaluation & Reasoning/Conclusions: Students learn to differentiate fact from opinion by questioning their own assumptions and inferences through short answer essay responses and class discussions. Students are asked to take sides in class debates and to formulate arguments for or against various positions, such as the pros and cons of labeling and the benefits and limitations of social media. In so doing, students also evaluate the nature of the evidence for source, biases, and agreement among authorities. Evaluating the obtained information for credibility, accuracy, and relevance encourages students to develop evidence-based evaluation skills. Students further develop reasoning skills by learning to formulate persuasive arguments based on evidence, such as demonstrating how astrology is a pseudoscience and that cramming is ineffective for example.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Ethical Reasoning: As students learn about research in psychology they are encouraged to develop ethical reasoning skills by learning about research ethics and the ethical guidelines for human research established by the American Psychological Association. Major ethical concerns (e.g., informed consent, protection from harm, and confidentiality) are introduced and students demonstrate an emerging understanding of these through short written responses and through media reviews. Throughout the course, research ethics continue to be discussed as students evaluate key studies, such as Milgram's seminal, but controversial obedience study.

Civic Discourse, Civic Knowledge and Engagement: Through small group discussions, class debates, and short answer written responses, students explain diverse positions, values, and practices and present their own positions on key issues such as corporal punishment, social media use, drug use, nurture-nature. By engaging with each other through in-class and online discussions students are expected to participate in respectful dialogue that shares different perspectives and recognize that there are multiple valid responses to such issues. For example, students engage in a debate about astrology and personality. This discussion requires students to be tolerant of different, often quite personal viewpoints on the subject while expressing their own viewpoints. In this way students demonstrate the ability to participate in respectful civic discourse.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 8 2019



## Upload Assessment

Completed - Mar 8 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Psychology 111 Self-change

Filename: Psychology\_111\_Self-change.pdf Size: 61.0 kB



## Upload Rubric

Completed - Mar 8 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Grading Rubric for Behavior Modification Paper

Filename: Grading\_Rubric\_for\_Behavior\_Modification\_Paper.pdf Size: 24.4 kB

## Application: 0000000223

Suzanne Balch - suzbal62@hotmail.com

NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Suzanne
Title	Balch-Lindsay
Phone	575.562.2314
Email	suzanne.balch@enmu.edu

### Submitting Institution

Name of HEI	ENMU Portales
Submitting Department	Physical Sciences

### Chief Academic Officer

Name	Jamie Laurenz
Email	jamie.laurenz@enmu.edu

## Registrar

Name	DeLynn.Bargas@enmu.edu
Email	DeLynn.Bargas@enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	PHYS
Number	113 P
Title	Survey of Physics
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	PHYS
Number	113 L
Title (if applicable)	Survey of Physics Laboratory

## New Mexico Common Course Information

Prefix	PHYS
Number	1115
Name	Survey of Physics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply concepts of classical mechanics (such as velocity, acceleration, force, inertia, momentum, torque, work, energy) to simple static and dynamic systems.
2. Apply concepts of thermodynamics (such as heat, temperature, internal energy, entropy) to simple processes.
3. Apply concepts of electricity and magnetism (such as fields, potential, charge conservation, static and dynamic induction) to simple circuits, motors, and other simple electrical contrivances.
4. Apply simple geometric and wave optics in simple situations.



## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Apply concepts of classical mechanics (such as velocity, acceleration, force, inertia, momentum, torque, work, energy) to simple static and dynamic systems.
2. Apply concepts of thermodynamics (such as heat, temperature, internal energy, entropy) to simple processes.
3. Apply concepts of electricity and magnetism (such as fields, potential, charge conservation, static and dynamic induction) to simple circuits, motors, and other simple electrical contrivances.
4. Apply simple geometric and wave optics in simple situations.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students are presented with mathematical applications in the areas of mechanics, electricity, magnetism, thermodynamics, and quantum theory. Students, in each area, must read to delineate the problem, determine the unknown, identify all pertinent information provided by the problem, apply appropriate problem solving techniques/formulas to find a solution, and then verify the reasonableness of their solution. Through the use of in class discussions and small group work, students discuss and explore techniques in identifying relevant information, best approaches to problem solving and viable alternatives to finding the solution. A final exam grading rubric is used to assess students' knowledge and critical thinking skills.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will express quantitative information symbolically and numerically when solving problems throughout this course. Students sometimes must interpret quantitative graphs in order to solve a problem. Students will convert descriptions of physical situations into appropriate algebraic equations for solving. A final exam grading rubric is used to assess students' knowledge and critical thinking skills.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students read Richard Feynman's speech "Cargo cult science" describing characteristics distinguishing science from pseudoscience. Each student writes a short paper addressing a contemporary example of a product, practice, or other manifestation of pseudoscience. In writing the paper, the student contrasts how scientific standards of ethics compare to what suffices in other contexts. The implications for these differing ethical standards manifest themselves in the outcomes for society at large. For example, in some instances the financial or health implications for consumers will be demonstrated. In this way, students compare and contrast scientific and non-scientific ethical perspectives and resulting impact of the product, practice, or other manifestation.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

Pending

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 22 2019



### Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## PHYS 113 - PHYS 1115 - Survey of Physics Assessment ex

Filename: PHYS\_113\_-\_PHYS\_1115\_-\_Survey\_of\_Physi\_UZ8oNN4.pdf Size: 117.6 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000127

Joaquin Gallegos - joaquin.gallegos@nnmc.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joaquin Gallegos
Title	Chair of Biology, Chemistry, and Environmental Science
Phone	(505) 747-5480
Email	joaquin.gallegos@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Biology, Chemistry, and Environmental Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

## Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	CHEM
Number	1120
Title	Introduction to Chemistry
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	CHEM
Number	1120L
Title (if applicable)	Introduction to Chemistry Lab

## New Mexico Common Course Information

Prefix	CHEM
Number	1120
Name	Introduction to Chemistry

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements
2. Identify elements from their name or symbol, use the periodic table to describe reactivity patterns of elements and to predict compound formation.
3. Describe the basic structure of an atom using subatomic particles, and apply these concepts to nuclear reactions.
4. Describe ion formation and the difference between covalent and ionic compounds. Name and write formulas for ionic and simple molecular compounds.
5. Write and balance chemical reactions. Use balanced reactions in stoichiometric calculations.
6. Describe the differences between the solid, liquid and gas phases. Use the gas laws in calculations, and apply these laws to everyday situations.
7. Explain different types of energy, and how energy is released or absorbed in a reaction
8. Describe acid and base behavior and the nature of buffer solutions.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Not applicable

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Utilizing the scientific method, students in introductory chemistry will understand the importance of critical think in learning basic concepts of chemistry. Students will be assessed on the Dalton Atomic Model and how to identify and gather information from resources such as the periodic table. They will have to process this information and how it relates to chemical bonding. Similarly, with oxidation, ionic, and covalent bonding on exams students will be assessed on their ability to identify the different types of interactions between chemical substances. The process of defining a problem will allow students concisely articulate a problem that independent of contextual information. Stoichiometry will be used to assess student's scientific reasoning and refine the skill of identifying flaws within presented materials. This can be as simple as balancing a chemical equation. Students will be instructed and assessed on the scientific method, focusing on question definition, hypothesis generation, supporting evidence gathering (determination if evidence is valid or invalid), collecting data, and formulating a valid conclusion. Utilizing open ended questions in the course, students will be required to explain answers will reinforce the scientific method within the course. In addition, the scientific method and all its steps will be assessed on exams.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning within chemistry is pivotal as students will be required to interpret and assessed on chemical concepts including the Dalton Atomic Model, chemical equations, and acids and bases within exams, assignments and quizzes. Using the periodic table and other visual representation of data students will be assessed solving basic equations and their ability to apply quantitative models to obtain the correct answer. Balancing chemical equations, determining limiting factors, and other activities require students to analyze the quantitative argument and the application of a quantitative model. Within these problems is an inherent logic and line of argument that the student will have to validate or determine. Determining valence electron organization, pH, and various conversions will evaluate a student's ability to apply specific models in a correct manner. Also utilizing word problems, students will be evaluated on the analysis of quantitative arguments and their reasoning. Within simple chemical equations there is an inherent argument and reasoning that leads students to the correct answer. Similarly, these concepts will also be assessed in homework assignments, quizzes, and exams. Utilizing many of the real-world problems like acid rain, water pollution, and others, students will be required to apply appropriate equations and concepts to solve problems on homework assignments.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Chemistry plays a role within personal and social responsibility by the impacts of chemical reactions on human basic needs. The course will touch on issues related to air, water, energy, and other issues that impact modern life. Issues such as demand for certain consumer goods that are produced by chemical process and how these goods impact our world. Plastics, a necessity of modern life is chemically derived, requires energy for production, and after its use, pose a problem to the planet. Students will be asked to evaluate their consumption of plastics in a short homework assignment and how this creates a long term local and global problem. Also, how advances within chemistry are solving the problems of modern society. Additionally, how new technologies can utilize chemistry to remediate existing and future modern-day problems. Another brief homework assignment will look at the multicultural component of history of chemistry and celebrate how different cultures have developed chemical.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/curricular-assessment/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

CHEM-EXAM SP



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000237**

Suzanne Balch - suzbal62@hotmail.com

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Suzanne Balch Lindsay
Title	Asst VP Academic Affairs
Phone	5755622314
Email	Suzanne.Balch@enmu.edu

### Submitting Institution

Name of HEI	ENMU Portales
Submitting Department	Physical Sciences

### Chief Academic Officer

Name	Jamie Laurenz
Email	jamie.laurenz@enmu.edu

### Registrar

Name	DeLynn Bargas
Email	DeLynn.Bargas@enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	PHYS
Number	151 P
Title	General Physics
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	PHYS
Number	151LP
Title (if applicable)	General Physics Laboratory

**New Mexico Common Course Information**

Prefix	PHYS
Number	1230
Name	Algebra-Based Physics I

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate converting units and other aspects of dimensional analysis in the working of numerical problems.
2. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of particles in one and two dimensions.
3. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of a rigid body in two dimensions.
4. Apply Newton's theory of gravitation to circular orbits and demonstrate understanding of how Kepler's laws of planetary motion provide the empirical foundation for Newton's theory.
5. Apply the mathematics of vectors to the principles of Newtonian mechanics.
6. Apply principles of Newtonian mechanics to the case of static and dynamic incompressible fluids, including Archimedes's and Bernoulli's principles.

Optional topics may include (some schools include these in Physics I, others in Physics II):

1. sound
2. waves
3. heat
4. oscillatory motion
5. thermodynamics

**Optional Student Learning Outcomes**

1. Describe the fundamental properties of periodic motion.
2. Explain and apply the basic concepts of sound and wave motion.
3. Explain the basic concepts of heat and thermodynamics.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

Consistent with decades of pedagogical research by the physics community, critical thinking is fostered and assessed using conceptual questions in classroom discussions. Successful completion of a concept question requires

1. The interpretation and delineation of a problem in terms of fundamental physical principles. 2. Identifying the information provided and implied. 3. Evaluation of the relevance of each item of information. 4. The development of a line of reasoning that produces an answer/prediction specific enough to be wrong. An accepted method of quantifying pedagogical success is the “gain”, defined as  $G = (S_f - S_i) / (100 - S_i)$  where  $S_i$  and  $S_f$  are pre and post scores in percent. Initial scores are collected in class via iClicker electronic polling. Selected conceptual questions addressing each SLO are presented prior to instruction. During the semester four paper exams are administered. Each exam includes the selected conceptual questions, along with others. Gains are calculated for the selected conceptual questions. The selected conceptual questions are placed in groups according to SLO and gains presented as histograms. This guides the focusing of efforts in changing pedagogy from year to year as well as providing assessment of the current year.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

In analyzing conceptual questions students must interpret quantitative information expressed symbolically, graphically, and in written English. In addition, students identify appropriate mathematical models (based on physical principles) to represent quantitative information in these contextual problems. In many conceptual questions, a numerical data is provided in written and/or graphical format and students must apply those models to generate numeric predictions. An accepted method of quantifying pedagogical success is the “gain”, defined as  $G = (S_f - S_i) / (100 - S_i)$  where  $S_i$  and  $S_f$  are pre and post scores in percent. Initial scores are collected in class via iClicker electronic polling. Selected conceptual questions addressing each SLO are presented prior to instruction. During the semester four paper exams are administered. Each exam includes the selected conceptual questions, along with others. Gains are calculated for the selected conceptual questions. The selected conceptual questions are placed in groups according to SLO and gains presented as histograms. This guides the focusing of efforts in changing pedagogy from year to year as well as providing assessment of the current year.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students read Richard Feynman’s speech “Cargo cult science” describing characteristics distinguishing science from pseudoscience. Each student writes a short paper addressing a contemporary example of a product, practice, or other manifestation of pseudoscience. In writing the paper, the student contrasts how scientific standards of ethics compare to what suffices in other contexts. The implications for these differing ethical standards manifest themselves in the outcomes for society at large. For example, in some instances the financial or health implications for consumers will be demonstrated. In this way, students compare and contrast scientific and non-scientific ethical perspectives and resulting impact of the product, practice, or other manifestation.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

Pending

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHYS 151 - 1230 Algebra-based Physics I ex assess

Filename: PHYS\_151\_-\_1230\_Algebra-based\_Physics\_\_xlsGufa.pdf Size: 308.2 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000177**

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

Application Form



The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	William R. Norris
Title	Professor of Ecology and Evolutionary Biology
Phone	575 538-6625
Email	<a href="mailto:norrisw@wnmu.edu">norrisw@wnmu.edu</a>

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	BIOL
Number	BIOL 2642
Title	Plant Form, Function and Diversity & Lab
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	BIOL
Number	2642L
Title (if applicable)	Plant Form, Function and Diversity Lab, 1 credit

## New Mexico Common Course Information

Prefix	BIOL
Number	2642/ BIOL 2642L,
Name	Plant Form, Function and Diversity & Lab

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for BIOL 2642/BIOL 2642L, Plant Form, Function and Diversity & Lab

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

#### GENERAL COURSE OUTCOMES SHARED ACROSS THE SCIENCES

1. Students will describe the process of scientific inquiry.

Students should:

- a. Understand that scientists rely on evidence obtained from observations rather than authority, tradition, doctrine, or intuition.
  - b. Students should value science as a way to develop reliable knowledge about the world.
2. Students will solve problems scientifically.

Students should:

- a. Be able to construct and test hypotheses using modern lab equipment (such as microscopes, scales, computer technology) and appropriate quantitative methods.
  - b. Be able to evaluate isolated observations about the physical universe and relate them to hierarchically organized explanatory frameworks (theories).
3. Students will communicate scientific information.

Students should:

Communicate effectively about science (e.g., write lab reports in standard format and explain basic scientific concepts, procedures, and results using written, oral, and graphic presentation techniques.)

4. Students will apply quantitative analysis to scientific problems.

Students should:

- a. Select and perform appropriate quantitative analyses of scientific observations.
- b. Show familiarity with the metric system, use a calculator to perform appropriate mathematical operations, and present results in tables and graphs.

#### SPECIFIC COURSE OUTCOMES SPECIFIC TO SUBJECT

1. Rutherford-Bohr Model of the Atom; Isotopes; Chemical Interactions; Properties of Water
2. Plant Cell Structure; Function of Major Organelles; Cellular Respiration; Photosynthesis; Cellular Transport Processes; Theory of Endosymbiosis
3. Light Spectrum; Light Reaction; Cyclic and Non-Cyclic Photophosphorylation; Dark Reaction; Alternative Photosynthetic Pathways
4. Plant Anatomy: Plant Cell Types; Meristems; Primary Growth; Leaf Anatomy; Stem Anatomy; Leaf and Shoot Variation; Root Anatomy; Root Variation; Secondary Growth
5. Seed and Fruit Structure; Germination; Dispersal
6. Water Transport: Roots, Stem, Leaves
7. Biology of Major Plant Groups (Mosses, Ferns, Gymnosperms, Angiosperms)
8. Ability to carry out Scientific Method, including Hypothesis, Experimental Design, Data Collection and Summarization; and Data Analysis

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

**Problem Setting:**

Early in the semester, students read 1-2 short (and peer-reviewed) scientific papers focused on seed germination biology. Students thus encounter application of the scientific method outside of their textbook. In addition, students learn about seed biology through close study of prepared slides of seeds and thus learn about seed structure (i.e., seed coat, endosperm, and embryo (cotyledons, epicotyl, mesocotyl, radicle). Thus, students have been thinking about seeds for at least a month prior to conducting this experiment focused on factors that influence seed germination.

**Evidence Acquisition:**

Prior to conducting an experiment, students submit a written proposal to the instructor that summarizes their hypothesis concerning factors that influence seed germination (e.g., cold-treated or not, light vs. dark, scarified or not scarified, exposed to ash or not, etc.) and outlining an experiment to test it. Upon approval of their proposal, students set up the experiment with appropriate controls and replication of each treatment. They collect data (e.g., number of seeds germinated in each culture dish) over a 1-2 week period and enter it onto a data sheet provided by the instructor.

**Evidence Evaluation:**

Students enter their data into an Excel spreadsheet and prepare an appropriate graph (available in Excel software) to display their experimental results. The majority of the students in this course will not yet have had statistics, so they must rely upon inspection of their graphed data to draw conclusions.

**Reasoning and Conclusion:**

Students consult with the instructor when evaluating whether or not their data support their original hypothesis. They summarize their conclusion in the Results section of the scientific paper they write for this project, which is then evaluated by the instructor. Students are informed that it is common for data to not support a hypothesis and that such results are valuable in and of themselves (i.e., they do not necessarily mean “bad data” or “bad science”).

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information: Students conduct several studies in this course that rely upon communication and representation of quantitative information, including the above seed germination experiment and an earlier lab exploring the effect of sucrose concentration on osmosis rates. They are given instruction on how to utilize Excel to enter and graph data, and how to cut and paste the resultant tables and graphs into a word document. Students who present the former research at the biannual student academic and research symposium further learn how to prepare posters that incorporate graphics and short text boxes.

Analysis of Quantitative Arguments: The majority of students will not have had statistics by the time they have enrolled in this course. Thus, they rely primarily upon inspection of graphical data to interpret whether or not the data they have collected support or do not support hypotheses they have proposed. Nonetheless, they are introduced to important concepts essential for data analysis including variation, the need for replication, the frequent occurrence of outliers, etc.

Application of Quantitative Models: We will explore implementation of quantitative models in the above lab exercises. In particular, we will teach students how to summarize data via calculations of summary statistics (e.g., mean time for heat treated seeds to germinate) by hand and via data analysis options in Excel. Furthermore, we will explore the use of Excel data analysis features to estimate the parameters of a linear model using data collected in class; e.g., the relationship between rate of osmosis as a function of sucrose concentration.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Intercultural Reasoning and Intercultural Competence: The subject of this class (plants) provides numerous opportunities for students to learn about the many different cultural uses of plants. For example, almost all students are intrigued by Cannabis sativa (hemp), how it is used recreationally and medicinally, and how the hemp industry has potential to rejuvenate many state economies. During walks around our science building, we always encounter and discuss cultural uses of agave (tequila), prickly pear cacti (various food products), soap tree yucca (fibers used by indigenous people throughout the Southwest), coast redwood (adaptations to a foggy environment very different than the desert southwest), mistletoe (yuletide traditions), blue and side-oats grama grasses (important native plants eaten by cattle on open rangelands), etc. Furthermore, during most years I prepare and serve to our students several big pots of Russian Borscht Soup (beets, carrots, potatoes, tomatoes, celery, caraway seed, etc.) which introduces them to a very different cuisine than that which they are accustomed to in southwestern New Mexico.

Collaboration Skills, Teamwork, and Value Systems: Students work together on many labs in this course. In particular, they work in teams of two-three on the seed germination experiment described above. Students work collaboratively to prepare and submit project proposals, work together to obtain necessary lab supplies, develop and implement schedules for data collection, and work jointly to graphically summarize the data. The class instructor closely monitors these projects and intervenes when necessary to ensure teamwork and substantial contributions by each team member to successful completion of the project.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtXsUi0CJHkV5-rKUrPnEBVukNjaJPSJAaorjVJhNqiw?e=Yr1bX2>



**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



**Upload Assessment**

**Completed** - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**3- BIOL 2642-2642L Plant F F Diversity & Lab -Ex Asse-WNMU**

**Filename:** 3-\_BIOL\_2642-2642L\_Plant\_F\_F\_Diversit\_zwK2FOz.docx **Size:** 20.8 kB



**Upload Rubric**

**Completed** - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**2- BIOL 2642-2642L Plant F F Diversity & Lab -Syllabus -WNMU**

**Filename:** 2-\_BIOL\_2642-2642L\_Plant\_F\_F\_Diversit\_TPWWFT2.docx **Size:** 24.1 kB

**Application: 0000000148**

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Brian K. Hudson
Title	Full Time English Instructor
Phone	505.224.4000 x53402
Email	bhudson11@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	NATV
Number	1150
Title	Introduction to Native Studies
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	NATV
Number	1150
Name	Introduction to Native Studies

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will develop a general understanding of the various concentration areas in Native American Studies throughout the United States.
2. Students will identify the contributions of various academic disciplines to Native American Studies.
3. Students will understand the intricacies and intersections of Indigenous scholarship in Native American Studies.
4. Students will articulate the importance of Native American Studies as a stand-alone discipline in academia.
5. Students will be able to connect community issues in both Native and Non-Native America to concepts taught in Native American Studies.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Students will acquire and evaluate evidence when they determine the main ideas, key points, counterarguments, and rebuttals in a variety of Native American genres and multi-modal texts, such as scholarship, documentaries, and literature authored by Native Americans, like Paula Gunn Allen, Greg Cajete, Simon Ortiz, and N. Scott Momaday. Students will analyze these texts in Native American culture in order to understand and evaluate the overt and underlying messages to direct and indirect audiences. Students will evaluate the authority and value of sources, those read and those employed in their own arguments, and will synthesize sources in the service of written, visual, and audial documents throughout the course of the class. Students will craft short reflections on readings, research proposals, and analytical texts about the two central concerns of Native Studies—indigenouness and sovereignty. For example, in the Final Research Paper students are asked to problem set (see attached assignment) when they identify credible and relevant sources from which students will draw key support for a clearly reasoned thesis that draws conclusions about a topic in Native American culture, such as issues of language sovereignty, Native American mascots in sports, environmental exploitation on native lands, or repatriation of Native American artifacts.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To use intercultural reasoning and to gain intercultural competence, students will read works by authors with diverse Native America identities, beyond those found in the American Southwest. The readings will address the intersections of these identities and the relationship to cultural systems of colonial power and privilege, both historically and in the modern era. Students will collaboratively discuss and analyze these texts in small groups and develop individual analyses of their own identities in dialogue with other students. For example, students will study the two central concerns of Native Studies—indigenouness and sovereignty to understand civic discourse’s role in the regulation of Native American identity through a consideration of how government practices, in a local and global context, have confined and shaped Native Americans’ experiences. Students will be assessed for their application of the theories and methods of Native American Studies and how they apply to the lived experience of Native Americans when examining issues such of language sovereignty, Native American genocide, Native American mascots in sports, environmental exploitation on native lands, or repatriation of Native American artifacts (see the attached research assignment).

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Students will evaluate the texts used in the class as well as personal research conducted for the purposes of completing assignments using literacy skills to determine the authority and value of information. In addition to producing written work in class, students will also have the option to create digital elements such as webpages, blogs, and videos in order to communicate application of theory and to gain digital literacy. Throughout the semester, students use appropriate formats and structures. Students may opt to create a written memoir, a photographic essay, or an audio essay to communicate the Native American experience of the social construction of racial and ethnic identity. Additionally, students will be assessed when they stage inquiries into cultural, historical, and political systems to examine problems related to Native American ethnicity, define specific problems in Native American Studies, and generate reasonable responses. Weekly, students will discuss and debate readings, extracting main ideas and key points to be used in later applications. Students will be assessed for their use of source credibility, accurate use of source material, and ethical citation strategies in class assignments.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

NATV research paper



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Grading Rubric for NATV

Filename: Grading\_Rubric\_for\_NATV.docx Size: 14.8 kB

## Application: 0000000155

Janett Johnson - janett.johnson@clovis.edu  
NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility



6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	HIST
Number	102
Title	Survey of American History Since 1865
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	HIST
Number	1120
Name	United States History II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- 1) Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries for the history of the United States from Reconstruction to the present.
- 2) Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.
- 3) Students will summarize and appraise different historical interpretations and evidence in order to construct past events.
- 4) Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluate credibility, perspective, and relevance.
- 5) Students will create well-supported historical arguments and narratives that demonstrate an awareness of audience.
- 6) Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will analyze and critically interpret significant primary texts and/or works of art during the semester. Emphasis will be placed in these visual and written materials upon key elements and drivers of American social, economic, and cultural institutions. These could include the role of modernization, growing American power, and increasing national self- fulfillment as a key driver in a world view that shapes relationships with western nations and world powers in the rapidly changing world stage. In addition, concentration upon the religious and ideological belief systems that form the development of the modern American political and social landscape, and the role of the political economy and the burgeoning American sense of self, nationalism, and American Exceptionalism in developing modern era. In assessment, all students will take a comprehensive and objective final exam. Every multiple-choice question on the exam will be linked to one or more of the course objectives that address the area state competencies. Questions on the final exam will be based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. Ninety of the one hundred questions will come from the three hourly exams taken during the semester. The final ten questions will evaluate students' understanding of ideas and topics presented in the last class meeting. The use of lecture/reading outlines, documentary films, YouTube clips, and review sessions at the start and end of each class will create an incremental sequence of student comprehension of the course objectives and competencies. Students will analyze how modern America developed and emerged as a leading world power, and how the role of the changing nature of government, new social configurations, and the emergence of technology changed the fabric of democracy and the republic.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives to identify the individual role of economy, society, government, religion, and culture in the history of the U.S across the semester. Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives to identify the individual role of economy, society, government, religion, and culture in the history of the U.S. The thematic concentration of the material particularly is focused upon ideas and traits related to social institutions, internal and external factors that influence the understanding of the present as related to an awareness of past heritages in American History, the nature and importance of belief systems in forming behavior and social mores, and how these systems are embedded in laws and social institutions – as related to the development of the American nation state from the Civil War through the contemporary era. In detail, students will trace and discuss the influence the role and effects of Reconstruction, the American West, and industrialization on the development of the United States. Students will discuss how imperialism, world war, world economic depression contributed to a modern U.S. Government and society. Students will recognize the origins of World War II and how its consequences affected the domestic and foreign policies of the United States and the world. The use of lecture/reading outlines, documentary films, YouTube clips, and review sessions at the start and end of each class will create an incremental sequence of student comprehension of the course objectives and competencies.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

In this course, during the semester, students will be exposed to and required to use a range of digital platforms and media sources, including PowerPoint slide presentations, historical maps, primary documents, historical documentaries, YouTube video clips, subject related websites, and a host of other digital venues to reinforce visually the contextual basis of ideas, events, and trends discussed during the course of this class. These tools will be implemented in this course through various means in the face to face classroom environment, the Interactive Television platform, and through the Canvas Digital Learning platform and its many digital capabilities. Students will learn the basic computer skills, technological steps, and platform skills to access a course shell within Canvas in all classes to access the above mentioned digital course materials, as well as listen to and observe specially-created recorded lectures by the instructor using Camtasia digital video technology. Also, within the Canvas course shell, students will also utilize exam and quiz study guides, practice quizzes, written assignments, and student-driven threaded discussions questions that allow interaction with fellow classmates and the instructor. Dual enrollment students, in an ITV setting, will be able to see, interact, and have discussions with each other and the instructor during class.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## HIST 102-HIST 1120 Assessment

Filename: HIST\_102-HIST\_1120\_Assessment.pdf Size: 113.8 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## HIST 102-HIST 1120 Syllabus

Filename: HIST\_102-HIST\_1120\_Syllabus.pdf Size: 90.2 kB

## Application: 0000000187

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes



### Institutional Course Information

Prefix	HI
Number	223
Title	History of Civilization II
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	HIST
Number	1160
Name	Western Civilization II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will be able to EXPLAIN in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries for the history of the western world from the early modern era to the present. Bloom Taxonomy's Cognitive Process: REMEMBER AND UNDERSTAND
2. Students will DISTINGUISH between primary and secondary sources, IDENTIFY and EVALUATE evidence and EMPATHIZE with people in their historical context. Bloom Taxonomy's Cognitive Process: ANALYZE, REMEMBER, EVALUATE, CREATE
3. Students will SUMMARIZE and APPRAISE different historical interpretations and evidence in order to CONSTRUCT past events. Bloom Taxonomy's Cognitive Process: UNDERSTAND, EVALUATE, APPLY
4. Students will IDENTIFY historical arguments in a variety of sources and EXPLAIN how they were constructed, EVALUATING credibility, perspective, and relevance. Bloom Taxonomy's Cognitive Process: REMEMBER, UNDERSTAND, EVALUATE
5. Students will CREATE well-supported historical arguments and narratives that demonstrate an awareness of audience. Bloom Taxonomy's Cognitive Process: CREATE, APPLY
6. Students will APPLY historical knowledge and historical thinking "in order to infer what drives and motivates human behavior in both past and present. "Bloom Taxonomy's Cognitive Process: APPLY, ANALYZE

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students pose questions about the goals and purposes of studying the past in the context of specific historical events.

Evidence Evaluation:

Instructors provide instruction on critical thinking skills related to reading and writing throughout the course. Students analyze readings from primary and secondary sources by examining the evidence and reasons used by authors while also learning to recognize bias, motivations, historical influence, and interpretation, and how information or lack of information affects beliefs and written records.

Reasoning/Conclusion:

Instructors promote critical thinking skills related to reading and writing about Western Civilization. Students analyze various primary and secondary source documents/readings in order to describe and explain the developments of Western Civilization. Using various forms of evidence gathering, students practice evaluating evidence in the form of annotated bibliographies and virtual “museum exhibits” or poster presentations. Students practice using support and corroboration for their positions and addressing opposing views during scheduled class discussions, small group debates, live simulations, case studies, and discussion boards. Using Document Based Questions (DBQ) in unit exams, students will submit an essay that demonstrates their historic thinking skills by evaluating, explaining, and creating their narrative using the primary and secondary sources provided. Students further demonstrate these skills in both long and short essays that require persuasive and argumentative writing strategies. Instructors assess critical thinking skills using quizzes, activities, and essays with rubrics for each activity.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students read primary and secondary sources to engage in-class debates, discussions, and negotiations. Students work together in collaborative groups/factions towards common goals, as well as to achieve personal objectives. Students will research the various topics of the scenario to construct arguments, rebuttal potential opposition, and understand the historical background.

Ethical reasoning: Students examine the role of differing ethical beliefs in the context of American history: How are ethical beliefs from the past in dialogue with ethics today? How can knowledge of the past inform ethical decision making today? Is knowledge of the past necessary to engage in thoughtful ethical analysis. Students consider these and other questions in the context of specific historical contexts.

Collaboration skills, teamwork and value systems: One way students will demonstrate their understanding of personal and social responsibility is by analyzing and critically interpreting significant primary texts, works of literature, music, art, and film. Using art, architecture, and film, students will be able to compare and articulate the diversity of the human experience and expressions across periods and perspectives. Critical Film review and analysis that is coupled with peer reviews is one way this course assesses the students in this area. Students also utilize food history – cookbooks and private writings passed down through families and cultures – in order to better understand the diversity of culture and perspective. Primary source readings from various perspectives allow students the opportunity to demonstrate their abilities to evaluate credibility and relevance of source materials in order to obtain a multi-faceted understanding of the past. One way this course assesses these skills is through Document Based Analytical Essays, and the course uses reflective essays periodically as we move through the course.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Instructors use Library Resources to educate Students about the Library, its resources, and the benefits of using the Library to conduct research over generic search engines such as Google or Chrome. Standards and methods of formatting are presented and in multiple assignments students are required to gather and present their research according to those standards. Topics such as credibility, copyright, intellectual property and fair use are presented and discussed in preparation for the research assignments.

Digital Literacy:

As part of the departmental curriculum, instructors assign a Google Map project where students are required to create a collaborative digital footprint of historical information. Students search online and library databases for their own topics that meet the current week's scheduled topics and create a concise, short encyclopedia entry on the course's Google Map for the rest of the class to read, edit, and study from. This facilitates education and discussion on the use of technology to create and learn history and proper citations and source evaluations. In this class students must find, use, and cite sources in MLA or APA format. Instructors assess information and digital literacy in the context of relying information for other students to utilize, proper use of technology and sources, and use a rubric to assess student learning.

Information Structure: Students produce projects that adhere to standard organization of introduction with a thesis, body with clear topic sentences, and conclusion. Students integrate and synthesize primary and secondary sources into their work. History faculty work with faculty in other disciplines to ensure that campus wide communication standards for organization and clarity are upheld/

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided evidence to help understand the past and how it affects the present.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



**Upload Assessment**

**Completed** - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**HI223 Sample Assignment**

**Filename:** HI223\_Sample\_Assignment.docx **Size:** 12.8 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000034**

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 13 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	PHYS
Number	1230
Title	Algebra-based Physics I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	PHYS
Number	1230L
Title (if applicable)	Algebra-based Physics I Lab



## New Mexico Common Course Information

Prefix	PHYS
Number	1230
Name	Algebra-based Physics I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate converting units and other aspects of dimensional analysis in the working of numerical problems
2. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of particles in one and two dimensions
3. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of a rigid body in two dimensions
4. Apply Newton's theory of gravitation to circular orbits and demonstrate understanding of how Kepler's laws of planetary motion provide the empirical foundation for Newton's theory
5. Apply the mathematics of vectors to the principles of Newtonian mechanics
6. Apply principles of Newtonian mechanics to the case of static and dynamic incompressible fluids, including Archimedes' and Bernoulli's principles

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Explain the basic concepts of heat and thermodynamics

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem setting: In some labs, students have a task to test a hypothesis in a physical situation such as balanced torques. They state a hypothesis to set the problem they will solve (Appendix A).

Evidence acquisition: In most labs, students acquire evidence experimentally, for instance by finding the position of a weight that balances another torque (Appendix A) or timing the motion of a whirling weight (Appendix B).

Evidence evaluation: Students evaluate their lab results for accuracy and discuss possible sources of error (Appendix A, B).

Reasoning/Conclusion: Students state conclusions based on their lab results (Appendices A and B). In homework and test problems, students determine what solution method to use. (Appendix C). Also, in some homework problems, students answer conceptual questions on such topics as the distinction between velocity and acceleration, showing the reasoning that led them to their understanding of the physical situation in question (Appendix D).

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of quantitative information, Application of quantitative models: On homework and tests, students read questions and communicate answers using mathematical notation including units. They work the problems by applying quantitative models presented there and in class. (Appendix C). These are the main assessments of the lecture course. Also, on labs, students describe their procedures and express their results and conclusions (Appendices A and B).

Analysis of quantitative arguments: Students are given quantitative physics arguments and analyze them to determine whether they're correct or incorrect, and if incorrect, what the mistake(s) is or are (Appendix E).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students answer homework questions on global issues of sustainability related to physics, such as sources of energy (Appendix E).

Collaboration skills, teamwork and value systems: In every lab, students work together, and in some, they reflect on their collaboration, addressing specific questions about division of labor and conflict resolution and how they could improve their collaboration (Appendix B).

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 10 2019



#### Upload Assessment

Completed - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### PHYS 1230 assignments

Filename: PHYS\_1230\_assignments.pdf Size: 405.9 kB



#### Upload Rubric

Completed - Mar 10 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### PHYS 1230 rubric

Filename: PHYS\_1230\_rubric.docx Size: 13.5 kB

### Application: 0000000149

David Smith - davsmith@nmsu.edu

NM General Education Curriculum



#### Application Form

Completed - Mar 22 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	David Smith
Title	Director of Assessment
Phone	(575) 646-7621
Email	davsmith@nmsu.edu

### Submitting Institution

Name of HEI	New Mexico State University
Submitting Department	Agricultural Extension and Education

### Chief Academic Officer

Name	Dr. April Mason
Email	provost@nmsu.edu

### Registrar

Name	Kori Keyes
Email	krkeyes@ad.nmsu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	AXED
Number	201G
Title	Effective Leadership and Communication in Agricultural Organizations
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	AXED
Number	2120
Name	Effective Leadership and Communication in Agriculture

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Student Learning Outcomes

1. Understanding Leadership
  - a. Definitions of Leadership
  - b. Agricultural Education, FFA , Leadership
  - c. Leadership Categories
  - d. Democratic, Authorization, and Situational Leadership
  - e. Personality and Leadership Relations
  - f. Developing Leaders
  - g. Personal Leadership Development



- h. Ability, Experience, and the Opportunity to Lead
- i. Leadership in the Workplace
- j. Human Relations, Technical, and Conceptual Skills
- 2. Communication Skills
  - a. Communication and Leadership
  - b. The Purpose of Communication
  - c. Forms of Communication
  - d. Communication Barriers and Styles
  - e. Verbal and Nonverbal Communication
  - f. Feedback
  - g. Self Communication and Interpersonal Communication
- 3. Leading Individuals and Groups
  - a. Group Dynamics and Team Building
  - b. Democratic Group Leadership
  - c. Importance of Groups
  - d. Types of Groups
  - e. Organizing Groups
  - f. Group Dynamics, Development, and Discussion
- 4. Conducting Successful Meetings
  - a. Skills Developed by Bring an Officer
  - b. Basic Meeting Functions
  - c. Characteristics of a Good Meetings
  - d. Planning and Preparing for Meetings
  - e. The Meeting Room
  - f. Committees
  - g. Informative and Motivational Meetings
  - h. Group Member Involvement
  - i. Officer and Member Responsibilities
  - j. Developing a Program of Activities

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students in AXED 201 G identify and communicate in oral, written, non-verbal, and electronic genres and mediums. Assignments develop intrapersonal (e.g., the reflective Student Leadership Challenge Workbook), interpersonal (e.g., practicing non-verbal communication), small group (e.g., Broken Squares Exercise), and public (e.g., introducing a speaker, prepared persuasive speech, prepared informative speech, debate, and conducting a meeting using parliamentary procedure) communication skills. Writing skills are emphasized by the workbook assignment and composing speech outlines. Two speeches require high quality visual aids and use the Internet and NMSU Library to find credible references. Strategies appropriate for rhetorical situations taught are: 1) using demographics, psychological characteristics, and expectations to analyze the audience and 2) analyzing the purpose of the gathering, conventional customs of the host organization, facilities and audio/visual capabilities, time allotment, and events preceding or following the presentation to develop a successful speech. Strategies for understanding and evaluating messages include reading references and evaluating videotaped speeches for main points and key arguments. For the speech and debate activity, students make key arguments and, in the debate, counterarguments and rebuttals. Because the persuasive speech is over a local, state, national, or international issue, students learn to research their issue from a specific stakeholder lens and apply cultural, political, and economic theoretical lenses. Films like *Invictus* help students understand and evaluate messages in terms of the rhetorical situation. Finally, the class emphasizes evaluation and production of arguments by teaching multiple speech designs and how they address different arguments; building persuasive messages with evidence, proofs, and arguments; and avoiding common fallacies in persuasive messages (e.g., slippery slope fallacy). For the persuasive and informative speeches, three and five credible references, respectively, are cited in APA format in students' bibliography, and used and cited appropriately in their speeches. An emphasis on using peer-reviewed references is made by the instructor.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The students in AXED 201 G are required to think critically throughout the semester. In our small group labs, students learn the problem-solving process and how to work effectively in problem-solving groups starting with delineating a problem or question. Persuasive and informative speech, debate, and parliamentary procedure practicum preparation also start with delineating problems or questions. For all three speeches, the debate, parliamentary procedure practicum, and the Student Leadership Challenge Workbook, students must identify and gather evidence necessary to address the problem. To assist the students with researching their problems, the class covers using all forms of print materials ( e.g., periodicals, dictionaries, thesauruses, sources of quotations, scientific journals, and Extension publications), Internet and other computerized searches, interview material, and personal experiences and observations. An emphasis on using peer-reviewed references is made by the instructor. Students must also think critically when they evaluate their evidence for credibility, probable truth, and relevance to a situation. To practice evidence evaluation, we watch a number of leadership/communication case studies depicted in film and noteworthy historical speeches. For example, we evaluate the oral communications of President Nelson Mandela in *Invictus*, General George Patton in *Patton*, General Douglas MacArthur's farewell speech to Congress, the "I Have a Dream Speech by Dr. Martin Luther King, Jr., and Malcom X posturing with the Harlem police in *Malcom X* for credibility and relevance to a situation. Students also watch eight videotaped examples of the three required speeches and evaluate them using the rubrics with which they will be evaluated. Highlighted in our discussion of these examples are the evidences used and cited by the presenters to support their main points and students' conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation. The debate, parliamentary procedure and workbook assignments also call for informed and well-reasoned conclusions.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

In AXED 201G, ethical behavior when selecting, using, and creating information is emphasized. Students are required to research their persuasive and informative speech topics providing a bibliography of at least three or five references for each speech, respectively. References must be used and appropriately cited in the speeches. Avoidance of academic misconduct and particularly plagiarism is highlighted in the course. The class covers using all forms of print materials, Internet and other computerized searches, interview material, and personal experiences and observations. Authority and value of information is taught in the context of selecting compelling, factual information for an argument or proof that doesn't slander those who oppose the student's position. Students are challenged to avoid common fallacies in persuasive messages that are commonplace in today's public discourse: defective or misused evidence (includes fake news), confusing fact with opinion, the red herring fallacy, the slippery slope fallacy, overusing pathos, assuming that association equals causality, hasty generalizations, non sequitur, straw-man fallacy, and ad populum. For improving digital literacy, most students create and communicate their visual aids in a digital environment, and the course uses Canvas. The persuasive and informative speeches address information structures by requiring use of the Internet and NMSU Library to find credible references. The rubrics used to evaluate these speeches encourage students to select, use, produce, and share information employing the appropriate speech formats taught in the course. Speeches in AXED 201G follow a standard format of introduction, body, and conclusion sections and main points that are introduced, expanded upon, and summarized during the speech. Finally, student research for the persuasive and informative speeches starts with students defining a problem or posing a question and through research generating reasonable solutions. Another assignment where inquiry is emphasized is the reflective student Leadership Challenge Workbook assignment.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

Not on file yet

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 20 2019



### Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## AXED 201G 2120G Sample Assessment

Filename: AXED\_201G\_2120G\_Sample\_Assessment.pdf Size: 251.2 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000219

Joaquin Gallegos - joaquin.gallegos@nnmc.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 22 2019

## Application Form

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## Essential Skills

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essential skills. Three essential skills are associated with each of six content areas:

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joaquin Gallegos
Title	Chair of Biology, Chemistry, and Environmental Science
Phone	5057475480
Email	joaquin.gallegos@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Biology, Chemistry, and Environmental Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

## Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	BIOL
Number	1110
Title	General Biology
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	BIOL
Number	1110L
Title (if applicable)	General Biology Lab



## New Mexico Common Course Information

Prefix	BIOL
Number	1110
Name	General Biology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the value of the scientific method as a means for understanding the natural world and for formulating testable predictions.
2. Explain how chemical and physical principles apply to biological processes at the cellular level.
3. Understand basic concepts of cell biology.
4. Understand that all organisms share properties of life as a consequence of their common ancestry.
5. Understand fundamental processes of molecular biology.
6. Understand the mechanisms of evolution, including natural selection, genetic drift, mutations, random mating, and gene flow.
7. Understand the criteria for species status and the mechanisms by which new species arise.
8. Understand methods for inferring phylogenetic relationships and the basis for biological classification.
9. Recognize the value of biological diversity (e.g., bacteria, unicellular eukaryotes, fungi, plants, and animals), conservation of species, and the complexity of ecosystems.
10. Explain the importance of the scientific method for addressing important contemporary biological issues.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Not applicable.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

This introductory biology course presents students with a view of the building blocks of life while studying and understanding the scientific method. Students will be assigned to develop a scientific experiment where they state the problem, allowing student to explore "global research theme", requiring students to research the context surrounding their problem and existing evidence related to stated problem, where students will have to decipher between valid and invalid sources of evidence. College library resources and journal databases will be used to help students identify sources of evidence. Evidence evaluation will be a guided process, so students can determine appropriate sources of evidence. Students will also be assessed for their critical thinking in exams related to evolutionary tree, cell organization, and basic genetics where critical thinking is required to fill diagrams and identify flaws within presented materials. Current topics papers related to biology will be assigned to students for summation to assess student comprehension of biological concepts and data/evidence. These papers will be appropriate in level of difficulty for an introduction course. In addition, students will be assessed on their ability to examine the logical argument presented within the paper and determine if the conclusion follows the argument in relation to evidence, presented argument, or logical conclusion.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will be asked to take quantitative information to synthesize, interpret, and discuss it. The course will evaluate students on very basic understandings of population growth and decay models and the Hardy Weinberg Law in word problems on exams and be asked to solve quantitative formulas using these equations. "Exploratory Analyses" will be presented on exams which will test student's ability to interpret visual presentations of data and conceptual models. Similarly, "Inferential Analyses" will also be assessed on exams presenting data to students with appropriate formulas and determine if students can correctly apply data to formula and derive logical conclusion. In addition, a variety of visual representations of data, such as graphs, charts, trend lines, etc. will be assessed by asking students to derive answers from the data presented in said visual representation. Through the process of the course student will be given scientific articles that will allow students to analyze quantitative arguments through class discussion, assignments, and exam questions. Concepts of number of biological variables, repetitions, sample size, ...In this process the instructor can also assess if students can apply quantitative models learned in texts and articles. This process will bridge the gap between the theoretical and the application.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and social responsibility will be addressed in this course by the topics of bioethics, climate change, pollution, and consumerism. Intercultural reasoning will be addressed by understanding each student's cultural background and perspectives on science and present students with scientific fact independent of religious, cultural, or historical context. Once science is presented without context, it will be reintroduced to facilitate discussion on ethical reasoning, focusing on group work for collaboration to create dialog and collaboration skills and team building. This will promote and assess how to engage in discourse that allows respect for opposing point of view while presenting one's own perspective and their evidence. Students then can develop a conclusion that have implications for local and global impacts. Tied to other assignments, bioethics will be addressed with many of the current advancements in genetics, cloning, CRISPR, etc. and the implications for our modern life and how these implications could change our planets sustainability. Additionally, we will discuss how society has historically addressed the ethical nature of scientific advancements and how we are currently addressing these advancements. These topics will be assessed in reports on academic articles which will also address critical thinking.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/curricular-assessment/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Biol110\_Written Assignment

Filename: Biol110\_Written\_Assignment.docx Size: 24.8 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000044

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 12 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility

5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joel Keranen
Title	Professor of Physics
Phone	575-492-2820
Email	jkeranen@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	PH
Number	113
Title	Technical Physics
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

No

**Will this course only count toward General Education for the AAS degree (at your institution)?**

Yes

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	PHYS
Number	1131
Name	Technical Physics

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Convert between metric and customary units. 2. Convert units within the metric and customary systems.
3. Solve kinematics problems with distance, speed, velocity, acceleration.
4. Find the stopping distance of an automobile under certain conditions.
5. Demonstrate the difference between a vector and a scalar.
6. Find the cornering acceleration
7. Describe the process of torque transmission via the transmission system
8. Explain centripetal and centrifugal forces
9. Demonstrate and apply Newton's laws of motion
10. Determine the rotational force of a vibrating component
11. Apply the relation between torque and force
12. Find the force of friction of a physical situation involving automobiles
13. Find the coefficient of friction
14. Demonstrate the difference between static friction and kinetic friction
15. Determine the maximum safe speed in a turn
16. Determine the force of friction given the coefficient of friction
17. Demonstrate the importance of balance in rotating automotive systems
18. Demonstrate rotational inertia of a rolling object
19. Apply angular kinematical relations to find angular displacement, angular velocity, and angular acceleration. 20. Find the centripetal force of a rotating object
21. Calculate the work done and the power of a physical process
22. Find the brake horsepower for a dynamometer Prony brake setup
23. Calculate the efficiency of an engine
24. Demonstrate simple machines



25. Demonstrate the different classes of simple machines
26. Find the IMA and AMA of a simple machine
27. Find the efficiency of a machine
28. Explain and apply the concepts of potential and kinetic energies
29. Apply the law of energy conservation
30. Calculate the momentum and impulse of automotive systems
31. Demonstrate stress and strain
32. Find the proper bolt size and grade based on applied torque
33. Find the stress and strain applying the relations of stress and strain
34. Discuss the three ways of heat transfer
35. Explain the importance of insulation in the automobile
36. Find the amount of heat flow of a system
37. Find the specific heat capacity of a system
38. Calculate the expansion or contraction of an object subject to a temperature change
39. Explain how a radiator works
40. Demonstrate the basic properties of waves
41. Demonstrate how sound works
42. Apply the sound relationship
43. Demonstrate intensity, pitch, frequency, speed of sound, and sound speed in various media
44. Describe the characteristics of light waves
45. Find the frequency and period of a wave
46. Demonstrate the Doppler Effect
47. Find the index of refraction

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Test ideas using modern laboratory equipment.
2. Estimate experimental uncertainties.
3. Use computers to analyze and report laboratory results.
4. Draw appropriate conclusions from quantitative scientific observations.
5. Accurately and clearly communicate the results of scientific experiments.
6. Apply simple concepts of magnetism and induction.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

To develop critical thinking skills in this course, students will

1. Complete laboratory reports in the lab portion of the course wherein they will develop the ability to express quantitative information symbolically, graphically, and in written language.

(Communication/Representation of Quantitative Information)

2. Complete a peer graded assessment of a laboratory report to interpret, analyze, and critique information by others. (Analysis of Quantitative Arguments)

3. Participate in a cumulative lab practical as a part of the final exam for the laboratory. The practical consists of presenting student with a set of devices and instruments, asking students to determine physical principles that can be tested with the device and analyzing the results of these tests.

(Application of Quantitative Models)

4. Participate in the assessment: Force concept inventory. Students will solve conceptual problems by use of physics concepts of force. (Problem Setting and Reasoning/Conclusion)

5. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition and Evidence Evaluation)

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning skills in this course, students will

1. Use the knowledge taught in lecture and laboratory to address and solve specific problems in physics.

(Problem Setting and Evidence Acquisition)

2. Participate in an assessment, “Quantitative Calculations of Automobile Performance”. This test consists of solving physics problems in automobiles, to test students on basic physical principles in automotive physics. (Problem Setting, Evidence Acquisition, Reasoning/Conclusion)

3. Students will evaluate certain problems, within lecture and laboratory, for their physical validity to learn to develop conclusions, solutions, and outcomes that reflect an informed, well reasoned evaluation.

(Representation of Quantitative Information and Reasoning/Conclusion)

4. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition, Evidence Evaluation, Representation of Quantitative Information, and Analysis of Quantitative Arguments)

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To develop personal and social responsibility skills in this course, students will

1. Write a group laboratory report on an experiment in which they work together as a team. Student interaction within their group will be integral in this experiment. (Collaboration Skills and Teamwork)
2. Visit an automotive service facility and write notes on all possible physics applications on the processes in the plant. The notes will be analyzed and discussed. (Civic Discourse, Civic Knowledge, Evidence Acquisition, and Reasoning/Conclusion)
3. Read an article about unethical behavior in automotive service situations to evaluate the evidence and data for credibility. Students will write a report about this article in the framework of concepts learned in lecture and laboratory. Specific examples of error and fraud are to be addressed. This assignment will assess the ability of the students to recognize and mitigate unethical behavior in their own work and others. Ethical reasoning will be central to this assignment. (Ethical Reasoning and Evidence Evaluation)
4. Students will write an essay on the importance of the automobile on society. (Sustainability and the Natural and Human Worlds)

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## FCI

Filename: FCI.pdf Size: 326.8 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000025

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



Application Form

Completed - Mar 15 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	GEOL
Number	1998
Title	Geology Field Experience
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	GEOL
Number	1998
Name	Geology Field Experience

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Identify the most common rock types based on their textures, composition, and expression in outcrop
2. Recognize the signs of tectonic disturbance by the emplacement of volcanic rocks and by the tilting, folding, and dislocation of stratified rock
3. Interpret the landscape as the expression of ongoing tectonic and erosional activity, rather than as an unchanging background
4. Describe the vast changes in New Mexico's landscape that have taken place over the last 1.7 billion years of Earth's history

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

On a field trip investigating plutonic igneous rocks, students visit a location in the Sangre de Cristo Mountains to observe a cross-cutting intrusion of granite. Students do not know what they are observing, but they are asked to use their field journaling skills to draw and document the outcrop, with prompting questions used to provide focus. A field journal entry is guided by baseline data, sketch and description, measurements and critical thought (see attached rubric); students use this baseline data to set up a problem (problem setting) and leads to asking questions to collect more data (evidence acquisition). Students use their documented observations, together with information from the geological literature, to understand the significance and history of the cross-cutting intrusion; thus, students evaluate the evidence and form their own conclusions. Students supplement their journal entries with written updates, annotations, and conclusions. A piece of outcrop is collected to compare with subsequent stops.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

In a laboratory activity, students separate sediment into its different size components through graduated sieves. Students then observe the sand-sized particles under magnification. Students assign the particles to different categories based on simple observation. A journal entry is made to document the categories, guided by baseline data, sketch, description, measurements and critical thought (see attached rubric). Next students calculate the percent of the sample of each category. Students pool the class results and graph the values (communication/representation). Graphs are transferred into field journal to document the results (analysis). Students then learn that the fragments are actually different common minerals weathered out of a local rocks, and are given hand samples of each mineral type to compare. Finally, students evaluate different rock samples to determine from which rock type the sand likely originated (application of quantitative models).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students visit the Santa Fe River in the middle of town. The location is a great opportunity to assess the roles humans have played in shaping the Santa Fe River – e.g. polluted runoff, planted trees, erosion control. Students individually brainstorm on the impact of humans on the river, and then have a more complete class discussion about sustainability and human impacts on the river (sustainability & natural & human worlds). After this class discussion, students are asked to write in their journal about what the appropriate solutions for the Santa Fe River might be and what the human and natural world impacts might be (ethical reasoning).

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 10 2019



Upload Assessment

Completed - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

GEOL 1998 assignment

Filename: GEOL\_1998\_assignment.docx Size: 13.0 kB



Upload Rubric

Completed - Mar 10 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## GEOL1998 rubric

Filename: GEOL1998\_rubric.docx Size: 13.4 kB

## Application: 0000000082

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

## Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

## Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	EN
Number	213
Title	Types of Literature I
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	1410
Name	Introduction to Literature

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Identify, define, and understand basic literary conventions and themes in fiction, poetry and drama.
2. Write reasonable, well-supported analyses of literature that ethically integrate evidence from texts

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

**C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Instructors provide instruction on critical thinking skills related to reading, writing, and research

throughout the course. Students analyze readings, including fiction, poetry, plays, and nonfiction. With guidance from the instructor, learners engage in dialogue to interpret the readings while also discussing the cultural and historical significance of the texts.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine. Students use secondary sources as evidence in analyzing primary sources (works of literature) in a research paper.

Reasoning/Conclusion: Students use support and evidence from primary and secondary sources to defend a thesis

statement while avoiding common logical fallacies. Students also practice critical analysis by commenting on each

other's rough drafts for essays and the research paper.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students can identify and analyze personal and social justice issues in a variety of texts, including a diversity of social and cultural contexts.

Ethical reasoning: Students analyze texts for ethical thought and action, including individual actions of characters and separating individual character thought and action from the commentary and thematic implications offered by the text as a whole. Students discuss literature as a social activity that reflects, promotes, and critiques values while comparing and contrasting these perspectives with belief systems currently operating in the world.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact

and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments. Instructors provide students with local opportunities to interact and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments.

Civic discourse, civic knowledge and engagement – local and global: Students analyze works of literature to

determine the cultural, racial, economic, or political factors present in the work. They diplomatically engage in

dialogue concerning these topics, recognizing the factors that shape literary production as well as analysis of

literature itself.



**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The research paper in this course is the centerpiece assignment and is worth a minimum of 30% in all sections. Instructors present students with lessons on finding, evaluating, and citing sources in analytical and argumentative writing. Avoiding plagiarism through ethical use of sources and citation is a key topic. Instructors require the use of professional sources from reputable publishers and peer reviewed journals. Student work is evaluated for ethical use of sources with Turnitin. Instructors offer guidance on interpreting Turnitin reports to help students responsibly and ethically cite sources.

Digital Literacy: Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers. Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the research paper.

Information Structure: Students practice paraphrasing and summarizing information from professional secondary sources. Students integrate multiple primary and secondary sources into a research paper structured around a developed thesis statement and topic sentences in MLA format.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis of the literary work in question.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 18 2019



### Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### EN213 example

Filename: EN213\_example.docx Size: 17.2 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000057

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 15 2019

## Application Form

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7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

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### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	505 428-1769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Arts

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

## Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	ARTS
Number	1610
Title	Drawing I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ARTS
Number	1610
Name	Drawing I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Produce drawings that demonstrate techniques and mechanics of observational drawing.
2. Demonstrate competency in the following practices: measuring and sighting, gesture, contour line, negative space, shape, value, space, volume, plane and texture.
3. Create drawings primarily from observation with black and white traditional drawing media.
4. Demonstrate effective verbal or written response to one's own art and the art of others.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

5. Demonstrate individual expression and imagination in drawing

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Through a variety of drawing genre (working from a still life, working from imagination, line drawings, tonal drawings, and visual narrative) students use drawing as a versatile medium of communication. Students experience of the versatility of drawing materials and related techniques. Drawing is done with the intention of visual communication with a “viewer.” Students identify strategies to manipulate the visual attention of the viewer. They employ “dynamic composition” for two-dimensional media, which is central to holding the visual attention of a viewer. Students evaluate the evidence of dynamic composition in their work and the work of others.

Drawing from observation, using still life setups constructed by faculty, students develop strategies to communicate form and different types of surfaces (glass, metal, fur, smooth, shiny, etc.,) through use of a variety of drawing techniques and materials. Students employ linear and atmospheric perspective to communicate spatial relationships.

Students learn that with observational drawing, artists don’t always draw what they see. They draw what they know will communicate the visual message that they intend the viewer to receive. Students learn to incorporate visual imagination into their observational drawings. This is done in a variety of ways in different classes.

Students draw with intention. They make choices to develop strategies for composition, the relative emphasis or lack of emphasis of cast shadows, the exaggerated expansion or contraction of space. They choose the most appropriate drawing genre, drawing materials and related techniques. Each choice helps to bolster or weaken their intended visual message.

Students construct drawings and develop arguments for the visual perception of intended relationships of space, form, and narrative content. They evaluate their work based on the evidence of how others are perceiving their visual message. They draw conclusions regarding what their drawings may need in order to be more successful.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Drawing requires constant questions and decisions, based on a student's degree of understanding of the many ways to create the illusion of form, depth and light with dynamic composition and narrative intention. At the beginning of each drawing, students think critically to devise the problem they will set out to solve. They decide how they will incorporate a drawing concept or technique introduced in the class, such as the manipulation of space, or the use of descriptive line. Students engage in verbal critique of the work done in class on a regular basis- as a class group and in discussions of their own work with faculty. Individually they evaluate their drawing and its progress (or lack of progress) towards an intended visual goal.

Students collect evidence for evaluation. They learn to see the actual angle of recession of a plane vs how it is drawn, or the actual relationships of light and dark (value relationships) vs how they are drawn. Students evaluate relationships of proportion in a still life vs the proportional relationships in the drawing. In addition to these formal concerns is the intension of visual message. Students learn that artists don't always draw what they see. Instead they draw what they know will communicate their intended visual message. Critical discussion is focused on how successful this has been done. Students learn to accept all or a kernel of the critique they receive. They learn to defend their work or to alter it based on actual perceived visual communication. Thus, they learn to evaluate what they see and compare this to what has been drawn, as well as to give a reasoned explanation regarding the success (or lack of success) of a particular drawing, and to conclude what aspects of an evaluation they will incorporate into their work.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students practice safe and sustainable studio practice. Students understand this as the responsible, safe, ethical use and disposal of drawing materials and equipment. Students participate in collaborative group critique frequently. In group critique students verbalize the strengths and weaknesses of the work of their fellow classmates, thus taking on the responsibility for assisting in each other's improvement in the application of drawing as a versatile medium of communication. Faculty design one collaborative drawing project in which students work with each other to complete. To complete this project students must gain an understanding of each other's artistic strengths, etc. They collaborate on the division of labor, problem solving and display of the finished piece.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 14 2019



Upload Assessment

Completed - Mar 14 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

ARTS 1610

Filename: ARTS\_1610\_Sample\_course\_assessment.\_\_myKb7oX.docx Size: 394.9 kB

Upload Rubric



Completed - Mar 14 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## ARTS 1610

Filename: ARTS\_1610.DI.Sample\_Rubric.docx Size: 12.6 kB

### Application: 0000000023

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 12 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills

throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	BIOL
Number	1215
Title	Biology for Environmental Sciences
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	BIOL
Number	1215L
Title (if applicable)	Biology for Environmental Sciences Lab

**New Mexico Common Course Information**

Prefix	BIOL
Number	1215
Name	Biology for Environmental Sciences

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the importance of environmental sciences in everyday life
2. Recount historic events that shaped the environmental sciences placing them in the socioeconomic and political context
3. Explain the relationship among the different components of the ecosystem
4. Explain and apply the scientific method in case studies or new situations of scientific enquiry
5. Describe the influence of chemistry in the functioning of life and ecosystems
6. Explain what factors affect population dynamics
7. Explain species interactions and community dynamics
8. Explain biogeochemical cycles and how they affect life
9. Describe energy cycles and its relevance on the ecosystem
10. Compare and contrast energy sources for human activities in terms of their impact on their environment
11. Explain how human activities affect water and air quality and how they affect life of humans and other organisms

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

For the final research project in this class, each student chooses an environmental problem and compares/contrasts two potential solutions to their chosen problem (problem setting). Students work on the project for the last two months of the course. Students begin the project by submitting a one-paragraph project proposal outlining the chosen problem, two solutions and a citation of one peer-reviewed source applicable to their problem/solution (problem setting). Several weeks later, students submit an annotated bibliography with a minimum of 8 sources, 7 of which must be peer-reviewed scientific literature. Students write annotation that assess the sources' arguments and evaluate the impact of the data on their understanding of the problem and the solution (evidence acquisition & evidence evaluation). The final part of the project is a 10-minute oral teaching presentation to the class using some sort of presentation program like PowerPoint or Prezi. The students present their problem and choose one of their solutions as the best selection to the problem; they must present data/figures/images from at least three of the peer-reviewed sources that they used in their annotated bibliography (evidence evaluation & reasoning/conclusion).

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/representation of quantitative information – In the human demography lab, students analyze birth and death year information from a rural cemetery. They organize the data to assess survival/mortality rate data and compare male and female survival rates for individuals who died before and after 1950. They represent that data with average values, and also create graphs of male versus female survival, and pre-1950 and post-1950 survival.

Analysis of quantitative arguments – We discuss in class and students read an article about the concept of “peak oil” – the idea that oil supplies are not limitless and that humans have likely reached a maximum of oil production. Students then use worldwide oil reserves data from the U.S. Energy Information Agency to estimate the known worldwide oil reserves and calculate how long it will take to consume those known oil reserves. Students then use their calculations to assess the idea of peak oil and how it is portrayed by governments, corporations and others.

Application of quantitative models – Using three examples vehicles with different gas mileage (16, 40 & 55 mpg), students calculate the fuel an individual vehicle with that gas mileage will use in a year, the fuel a United States-wide fleet of vehicles with that gas mileage would use and then calculate the difference in carbon dioxide production. Students use these values to assess the impact of gas mileage on greenhouse gas production and also compare those values to worldwide production of carbon dioxide from burning fuel wood.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

In this class, students participate in many case studies in class that address “sustainability and the natural and human worlds” and “ethical reasoning”. Two case studies can act as examples of the kind of work students do in lecture, lab and as assignments. In the first situation, students are asked to decide if a bird guide who kills a cat to protect birds should be found guilty of animal cruelty. Students analyze the evidence and arguments pertaining to a real court case and discuss how the ethical, legal, and scientific dimensions of a conservation case study can or cannot be reconciled with each other (see attached assignment). In a similar case, students are asked to decide what to do in a situation involving urban wildlife (deer) that are potentially damaging plant biodiversity. Students weigh scientific data about impacts of urban wildlife and assess potential solutions to fix the problem; the solutions take into account the surrounding urban human population and effectiveness to solve real-world impact of overgrazing by urban wildlife populations (see attached assignment). For both case studies, students are asked to read background material before lecture/lab, answer questions about the reading, and follow up the class activity with a written synopsis of their solution(s).

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 8 2019



Upload Assessment

Completed - Mar 8 2019



The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## biol114\_08ReadingQs

Filename: biol114\_08ReadingQs.docx Size: 16.4 kB



### Upload Rubric

Completed - Mar 8 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## HW Rubric

Filename: HW\_Rubric.docx Size: 13.7 kB

## Application: 0000000046

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 18 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joel Keranen
Title	Professor of Physics
Phone	5754922820
Email	jkeranen@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	PH
Number	114C
Title	Introduction to Physics
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	PHYS
Number	1115C
Name	Survey of Physics with Lab

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:

<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply concepts of classical mechanics (such as velocity, acceleration, force, inertia, momentum, torque, work, energy) to simple static and dynamic systems.
2. Apply concepts of thermodynamics (such as heat, temperature, internal energy, entropy) to simple processes.
3. Apply concepts of electricity and magnetism (such as fields, potential, charge conservation, static and dynamic induction) to simple circuits, motors, and other simple contrivances.
4. Apply simple geometric and wave optics in simple situations.
5. Test ideas using modern laboratory equipment.
6. Estimate experimental uncertainties.
7. Use computers to analyze and report laboratory results.
8. Draw appropriate conclusions from quantitative scientific observations.
9. Accurately and clearly communicate the results of scientific experiments.
10. Apply quantum theory in simple situations such as the Bohr model of the atom, dual nature of light, atomic spectra.
11. Apply simple concepts of relativity.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

To develop critical thinking skills in this course, students will

1. Complete laboratory reports in the lab portion of the course wherein they will develop the ability to express quantitative information symbolically, graphically, and in written language.

(Communication/Representation of Quantitative Information)

2. Complete a peer graded assessment of a laboratory report to interpret, analyze, and critique information by others. (Analysis of Quantitative Arguments)

3. Participate in a cumulative lab practical as a part of the final exam for the laboratory. The practical consists of presenting student with a set of devices and instruments, asking students to determine physical principles that can be tested with the device and analyzing the results of these tests.

(Application of Quantitative Models)

4. Participate in the assessment: Force concept inventory. Students will solve conceptual problems by use of physics concepts of force. (Problem Setting and Reasoning/Conclusion)

5. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition and Evidence Evaluation)

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning skills in this course, students will

1. Use the knowledge taught in lecture and laboratory to address and solve specific problems in physics.

(Problem Setting and Evidence Acquisition)

2. Participate in the activity, “Estimating the Size of the Sun”. This activity consists of solving physics problems in physics with the Sun. (Problem Setting, Evidence Acquisition, Reasoning/Conclusion)

3. Students will evaluate certain problems, within lecture and laboratory, for their physical validity to learn to develop conclusions, solutions, and outcomes that reflect an informed, well reasoned evaluation.

(Representation of Quantitative Information and Reasoning/Conclusion)

4. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition, Evidence Evaluation, Representation of Quantitative Information, and Analysis of Quantitative Arguments)

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To develop personal and social responsibility skills in this course, students will

1. Write a group laboratory report on an experiment in which they work together as a team. Student interaction within their group will be integral in this experiment. (Collaboration Skills and Teamwork)
2. Visit an electrical generating station and write notes on all possible physics applications on the processes in the station. The notes will be analyzed and discussed. (Civic Discourse, Civic Knowledge, Evidence Acquisition, and Reasoning/Conclusion)
3. Read an article about unethical behavior in physics to evaluate the evidence and data for credibility. Students will write a report about this article in the framework of concepts learned in lecture and laboratory. Specific examples of error and fraud are to be addressed. This assignment will assess the ability of the students to recognize and mitigate unethical behavior in their own work and others. Ethical reasoning will be central to this assignment. (Ethical Reasoning and Evidence Evaluation)
4. Students will write an essay on the importance of physics infrastructure on civilization and society. (Sustainability and the Natural and Human Worlds)

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

FCI

Filename: FCI\_yNAV6La.pdf Size: 326.8 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000188**

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility



6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
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### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PI
Number	213
Title	Introduction to Philosophy
Number of credits	(No response)

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	PHIL
Number	2230
Name	Philosophical Thought

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Comprehend and differentiate between various philosophical approaches to questions within fields such as metaphysics, epistemology, ethics, and aesthetics.
2. Critically evaluate various philosophical arguments and positions.
3. Identify the differences that characterize the major subfields of philosophy.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: This class presents classical philosophical problems and questions to students from the branches of philosophy: epistemology, ontology and metaphysics, and axiology. Students learn that philosophy frequently poses questions and begins with wondering about ourselves and the world around us.

Evidence Evaluation:

Instructors provide instruction on critical thinking skills related to reading and writing throughout the course. Students analyze readings from primary and secondary sources by examining the evidence and reasons used by authors. The class examines competing approaches to philosophical inquiry in epistemology, ontology and metaphysics, and axiology

Reasoning/Conclusion:.

Instructors promote critical thinking skills related to reading, thinking, and writing. Students analyze various primary and secondary source documents and readings to describe, explain and analyze the developments of philosophy while synthesizing these developments into their personal world view.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: This class directly addresses both ethics and civics by examining the major ethical theories, including egoism, utilitarianism, Kantian ethics, contractualism, and virtue ethics.

Ethical reasoning: Faculty members ask students to reflect upon ethical decisions while also examining other approaches to ethics and morality. Students compare and contrast differing ethical approaches while applying the approaches to common ethical situations, such as lying and stealing. Students reflect on whether it is ever okay to lie or steal or take a human life by considering classical philosophical dilemmas, such as the trolley problem and the Heinz dilemma.

Collaboration skills, teamwork and value systems: The course continues to examine the application of ethical thought to communities by examining the major approaches to social and political philosophy: Where does the government's power come from, and what is the best form of government? Students work in teams on several in class activities to build team work skills.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The course asks students to consider different answers to each question. Clearly, authority is not enough when some of the most famous thinkers in history disagree. John Locke and Rene Descartes are famous and respected thinkers, but they disagree with each other about how human knowledge works. When experts disagree, students in this course examine the competing thoughts from the experts to come to their own conclusions. Students may choose a side, or they might synthesize competing approaches. At every point in this course, students are presented with multiple approaches to an area of philosophical inquiry. Because of the dialectical approach of philosophy, students cannot rely on arguments from authority; they must move beyond authority to analyze, evaluate, and synthesize competing points of view.

Digital Literacy: Students utilize modern learning tools, including computers, search engines, library databases, presentation software, screen recorders, and word processors to complete assignments. All assignment artifacts are submitted and graded through the Canvas LMS. The course culminates in a final project that requires students to record a video presentation and share it with the other students in the class.

Information Structure: Students produce projects that adhere to standard organization of introduction with a thesis, body with clear topic sentences, and conclusion. Students integrate and synthesize primary and secondary sources into their work. Philosophy faculty work with faculty in other disciplines to ensure that campus wide communication standards for organization and clarity are upheld. Students express their thoughts through class discussion, response papers, and a video presentation.

Research as Inquiry: Philosophy is structured as research through inquiry: What is reality made of? How do we understand reality? Do we have free will? Every topic in this course starts with a question.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 20 2019



### Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## PI 213 Sample Assignment

Filename: PI\_213\_Sample\_Assignment.docx Size: 14.8 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000251

Sara Vigil - savigil@luna.edu

NM General Education Curriculum



### Application Form

Completed - Mar 26 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Anita Roybal
Title	Director
Phone	5054542565
Email	aroybal@luna.edu

### Submitting Institution

Name of HEI	Luna Community College
Submitting Department	Humanities

### Chief Academic Officer

Name	Sharon Lalla
Email	slalla@luna.edu



## Registrar

Name	Henrietta Maestas
Email	hmaestas@luna.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	SPCH
Number	111
Title	Public Speaking
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

Yes

## Co-requisite Course

Prefix	NA
Number	NA
Title (if applicable)	NA

## New Mexico Common Course Information

Prefix	COMM
Number	1130
Name	Public Speaking

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate effective speech preparation. 2. Demonstrate effective speech delivery through use of language, nonverbal elements and the creation of presentation aids. 3. Analyze a potential audience and tailor a speech to that audience. 4. Evaluate presentations according to specific criteria. 5. Explain common propaganda techniques and logical fallacies, and identify them in the speeches of others. 6. Recognize diversity and ethical considerations in public speaking.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Students will: plan, arrange, and distinguish speeches for different purposes, including speeches that entertain, inform and persuade develop support, including researched authorities, for their speeches.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

In this course the student will communicate in a variety of genres from giving public speeches to having their speeches digitally recorded. They will demonstrate their ability to adapt their speeches for specific audiences. They will demonstrate in all four of their required speeches (introductory, informative, persuasive and special occasion) their ability to create speeches with reasons as to why an audience would want to listen to them. For the informative and persuasive speeches, students will show that they understand the purpose and context of their speech as they use an organizational speech worksheet in preparation for these two speeches.

As for understanding and evaluating messages, the student will demonstrate their knowledge of being a competent communicator by critiquing the live speeches of their classmates they are presented with a critique sheet to allow them to evaluate the context of the speech. The critiquing student will show that they understand the nature of being an appropriate, effective, and ethical communicator.

As for the evaluation and production of arguments, the student will demonstrate their knowledge using various communication genres; from listening to their classmates impromptu speeches; through the student informative and persuasive speeches; as well as evaluating online videotaped speeches. The student will show that their informative and persuasive speeches main-points and sub-points contain sound evidence. This is demonstrated in their creation of outlines. The student will show that they understand in their outlines how to cite sources in the MLA format and show they can create a works cited page.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical thinking skills for public speaking will be demonstrated in the informative and persuasive speeches. In the informative speech, the student will select a topic and create a thesis statement. The student will gather evidence from a variety of sources and must demonstrate to the instructor as to the validity of the source material. The student must be able to explain the process of how why they selected this particular material. They must explain their process of questioning the material and judging of it. The student will create an annotated bibliography to demonstrate they understand the validity of their sources based on the data's currency, the author's credibility, and the source from where they found their data. Their annotated bibliography will be graded based on the instructor's criteria. In their outline conclusion the student demonstrates their ability to synthesize their logic to reach a memorable ending. Regarding the persuasive speech, the student will become an advocate for argumentative topic. Similarly to the informative speech, the student will create an annotated bibliography, and furthermore explain what their criteria was for selecting the source material and to demonstrate their reasoning for the validity of the material.

In the persuasive speech, the student will demonstrate in their preparation outline that they understand the difference between valid and fallacious reasoning. They will demonstrate during classroom discussion. The student will also demonstrate in their persuasive speech outline how to create deductive and inductive arguments and be able to balance the outline out with Aristotle's proofs of ethos, pathos, and logic. In the oral argument, the student will demonstrate in the conclusion that they've synthesized the evidence to create a convincing argument.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

As the student prepares to collect evidence for their informative and persuasive speeches, their assignment in preparation for the speech, is to create an annotated bibliography from material found on the internet. The student will explain why they selected their material. The students will divide into groups to discuss their findings and to evaluate and analyze each other's material. The student will get the opportunity to revamp their bibliography, and turn in the original copy and the new copy to the instructor for a grade. The student will create a one-page evaluation from what they learned; from the group; and during the online research process.

Moreover, during classroom discussion throughout the semester, the student will be able to explain the value and process of being media literate. As a written assignment, the student will search online material and be able to explain its validity. The student will show that they can explain the authorship, currency and validity of the source. The student will also produce for discussion the difference between un-vetted internet sources, versus material from academic data bases.

Also in classroom discussion, the student will explain other online vehicles that provide evidence speech evidence. They will cite examples of the validity of using material from online blogs and whether it is credible to use as a source. The student will apply their critical thinking skills to explain the validity of a blog and/or a video website.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

NA

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 25 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Public Speaking Assessment

Filename: Public\_Speaking\_Assessment.docx Size: 13.6 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000236

Annemarie Oldfield - annemarie.oldfield@roswell.enmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility

5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Robin Billington
Title	Humanities Dept. Director
Phone	575-624-7252
Email	robin.billington@roswell.enmu.edu

### Submitting Institution

Name of HEI	Eastern New Mexico University-Roswell
Submitting Department	Humanities

### Chief Academic Officer

Name	Dr. Ken Maguire
Email	ken.maguire@roswell.enmu.edu

### Registrar

Name	Dr. Linda Neel
Email	linda.neel@roswell.enmu.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

**Institutional Course Information**

Prefix	ART
Number	102
Title	Beginning Drawing II
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

No

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	na
Number	na
Title (if applicable)	na

**New Mexico Common Course Information**

Prefix	ARTS
Number	2610
Name	Drawing II

**A. Content Area and Essential Skills**



## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1.Create drawings in wet and dry color media. 2.Practice analyzing and visually translating observed subjects from realistic, referential, and/or objective form, to non-representational or abstract imagery in drawings. 3.Compose fully developed drawings that include a conceptual or historical basis. 4.Engage in effective written and oral critique in response to one's own art and the art of others.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

same as above

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will learn how to work with others, engage with their audience, and effectively communicate their skills and expertise. They will exhibit awareness of their genre and medium by sharing and discussing their creations with others. Students create artwork which demonstrates versatility and application of different art strategies. This artwork uses two-dimensional design. Students will demonstrate an ability to deliver and evaluate arguments through giving and receiving outside critique on assignments. This critique will occur in a group environment. Learners are then required to verbally present their work and elaborate on what worked well and identify areas for improvement. They must also be receptive to and respond to criticism of other students. They are required to evaluate the other students' work and provide detailed feedback. During group and individual teacher/student discussions, students share their learning process as they present the influences and origins of their ideas. Along with developing visual presentation skills, such as generating visual aids and supplementary materials, students will demonstrate written communication skills through the production of written critiques of others' creations and through personal art journals.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will be challenged to think creatively to solve problems and errors pertaining to their artwork. Students will demonstrate emotion in their work based on a variety of prompts. They will use instructor feedback, student evaluation, and evidence from texts to identify and rectify faults in theirs and in others' works. Students will apply original ideas in original ways by experimenting with various styles and motifs. In order to determine similarity and originality, students will compare their own creations to others in the field. Through the production of a short one-page strategy piece, students will demonstrate an understanding of how to express ideas visually and how the piece will be perceived by others. After receiving feedback from students and instructor, students must verbally and in writing articulate how they will make changes to the their piece. Learners must consider what changes they might make to improve the work based on the narrative/idea being communicated by the instructor or peers. The student must then make improvements in the quality/application of a variety of techniques. Students also will demonstrate an understanding the properties of different media and an ability to produce varied drawings using dry and fluid media such as graphite-pencils, sticks, charcoal (vine and compressed) charcoal pencils, conte, felt tip pens, pen and ink, and brush and ink

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Through the production of a written response to a critique, students take responsibility for their own artistic development. Critiques provide an opportunity for reflection and candid assessment of their work and others, and to celebrate successes and take responsibility for correctable deficiencies and catastrophic failures in a constructive manner. Learners demonstrate the ability to both offer and receive feedback in a constructive critical environment. The skills needed to engage in a critical environment, including offering and receiving instructor generated feedback, will directly lead to future coursework and life skills as students gain an understanding of methods by which to listen carefully and humbly to feedback, and to deliver constructive assessments in a comforting, helpful manner. These skills will be modeled by the instructor. Students are exposed to intercultural artwork and required to evaluate the pieces based on social and cultural depictions of others' worlds. The instructor will use music from various cultures to inspire art that reflects the culture in a variety of ways. Students are required to maintain a clean environment and to take responsibility for their working areas to ready the space for future use by others. At showing of the work, students will demonstrate an ability to engage with the public about their work in a respectful and constructive manner.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan  
under construction

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



## Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Sample Assessment for Design and Drawing Classes

Filename: Sample\_Assessment\_for\_Design\_and\_Draw\_4nK2sXp.docx Size: 13.6 kB



## Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Sample Rubric for art portfolio

Filename: Sample\_Rubric\_for\_art\_portfolio\_QSyOn3X.docx Size: 14.3 kB

## Application: 0000000205

aonan tang - aonantang@gmail.com

NM General Education Curriculum



## Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	aonan tang
Title	Associate Professor of Physics
Phone	5756248169
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### Submitting Institution

Name of HEI	New Mexico Military Institute
Submitting Department	Science

### Chief Academic Officer

Name	Douglas J. Murray
Email	DMurray@NMML.edu

## Registrar

Name	Chris Wright
Email	Wright@nmml.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	PHYS
Number	1004
Title	Introduction to Physics
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	MATH
Number	1220
Title (if applicable)	College Algebra

## New Mexico Common Course Information

Prefix	PHYS
Number	1121
Name	Introduction to Applied Physics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes



**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

A. Substantive Objectives: At the conclusion of this course, you will be able to

1. Demonstrate an understanding of the physical principles, such as Newtonian laws of mechanics, Newton's theory of gravitation, and fluid dynamics.
2. Know the symbol for the physical quantities covered, and know the physical quantity for which each symbol stands;
3. Demonstrate an improved insight into the mechanical phenomena of the physical world, and have the knowledge of the technical terms used in the discussion of the phenomena studied.
4. Recognize the role that mechanics plays in many facts of our life and the responsibility of those who understand physics to contribute appropriately to their communities;
5. Using the scientific method to conduct an experiment with modern laboratory equipment.

B. Skill Objectives: Upon completion of this course, you will be able to

1. Apply principles of Newtonian mechanics to predict or calculate the translational motion of particles in one or higher dimensions using algebra.
2. Apply work and energy principle to understand the energy transfer and solve the problem with kinetic energy and potential energy.
3. Apply a systematic approach to problem solving by
  - a) Identify knowns and unknowns and set up strategies to solve the problem.
  - b) Derive algebraic solutions using appropriate symbols for physical terms.
4. Solve problems involving reading or constructing a graph.
5. Applying mathematics of vectors to principles of physics, such as vector addition, dot product and cross product of vectors.
6. Use Vernier Logger Pro units, LabQuests, computers, and/or the internet to gather, compile, and present information gathered experimentally;
7. Use other laboratory equipment to experimentally verify mechanical concepts.
8. Complete the laboratory report that presents experimental data in a data table and includes an analysis of the experimental results. Complete the pre and post-lab questions.

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

A. Substantive Objectives: At the conclusion of this course, you will be able to

1. Demonstrate an understanding of the physical principles, such as Newtonian laws of mechanics, Newton's theory of gravitation, and fluid dynamics.
2. Know the symbol for the physical quantities covered, and know the physical quantity for which each symbol stands;
3. Demonstrate an improved insight into the mechanical phenomena of the physical world, and have the knowledge of the technical terms used in the discussion of the phenomena studied.
4. Recognize the role that mechanics plays in many facts of our life and the responsibility of those who understand physics to contribute appropriately to their communities;
5. Using the scientific method to conduct an experiment with modern laboratory equipment.

B. Skill Objectives: Upon completion of this course, you will be able to

1. Apply principles of Newtonian mechanics to predict or calculate the translational motion of particles in one or higher dimensions using algebra.
2. Apply work and energy principle to understand the energy transfer and solve the problem with kinetic energy and potential energy.
3. Apply a systematic approach to problem solving by
  - a) Identify knowns and unknowns and set up strategies to solve the problem.
  - b) Derive algebraic solutions using appropriate symbols for physical terms.
4. Solve problems involving reading or constructing a graph.
5. Applying mathematics of vectors to principles of physics, such as vector addition, dot product and cross product of vectors.
6. Use Vernier Logger Pro units, LabQuests, computers, and/or the internet to gather, compile, and present information gathered experimentally;
7. Use other laboratory equipment to experimentally verify mechanical concepts.
8. Complete the laboratory report that presents experimental data in a data table and includes an analysis of the experimental results. Complete the pre and post-lab questions.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

Lecture, recitation exercises problems, quiz, exams, and associate labs will be given during the semester to develop critical thinking skills.

Problem Setting: Exercise problems, homework will be given after each lecture and students need to identify the components of the problem, find a method to solve the problem and draw a conclusion to the problem.

Evidence Acquisition: Students need to gather the evidence/knowledge learned in the past to solve the problem or answer a question. During the lab section, students should be able to gather information base on the physical principle and available laboratory equipment to support their conclusion.

Evidence Evaluation: Once the student solves the problem, they need to check the validity of the answer, solution or conclusion that obeys the physical laws. During the laboratory section, if a difference is made based on their conclusion, they should be able to find the uncertainty and find the factors that contribute to the discrepancy.

Reasoning/Conclusion: After the conclusion is drawn, the students should be able to validate their conclusion, for example, whether the application is doable base on other factors according to physics laws. During the laboratory section, students should have plans on how to improve the experimental method to get more accurate results.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Lectures, exercise questions, quiz, exams, and associated laboratory experiments will be given during the semester to develop this outcome.

Communication/Representation of Quantitative Information: By giving numbers to physical quantities, students should be able to derive/calculate the values of other physics quantities. For example, a student can calculate the safety distance between two cars on the main street with speed limit if they can acquire the average human respond time and friction coefficient of the road. During the laboratory section, students should be able to use modern equipment to gather quantitative information for certain physics quantity.

Analysis of Quantitative Arguments: Students should gather and interpret the information given in the question or raised in real life, and reasoning through by providing physical evidence to support the analysis. For example, in order to find the safety distance, the student should analysis the speed limit and average human respond time together with the friction coefficient, then find the appropriate physics laws to solve the problem. During the laboratory section, students should analyze the data acquired using the equipment to derive or support their conclusion.

Application of Quantitative Models: Students should apply appropriate quantitative models to solve problems using quantitative information gathered with proper analysis and reasoning. For example, in order to find the safety distance, the student should use the newton's second law and kinematic equations to estimate the safety distance. During the laboratory section, students should use appropriate physical models to draw conclusions using corresponding quantitative information acquired with scientific reasoning.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Collaboration skills, teamwork and value systems: Students will team up during the laboratory section to complete the task using physics concepts. During the two and half hours section, they should collaborate to finish collecting essential experimental data. After collecting the data, students should be able using appropriate physics models to analyze the experimental data. During the collaboration, they should team up to contribute their thought and time to draw a solid conclusion using the scientific method. Also, projects will be given during the semester which they will collaborate and team up to research on certain topic or projects. During the lecture section, they will also team up to work on problems or discuss answers to relevant social questions.

Sustainability and the natural and human worlds: Students should use the appropriate physics laws to understand the consequence of certain human action or understand the rules set up by human society to regulate the behavior. For example, by understanding Newton's three laws, they should know the importance of wearing a seat belt for both the driver and passengers. Also, by understanding friction coefficient, they should know that they need to drive slowly and pay extra attention when it is raining or snowing.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Supporting documents

Filename: supporting\_documents.pdf Size: 579.6 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000250

Sara Vigil - savigil@luna.edu

NM General Education Curriculum



Application Form

Completed - Mar 26 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility

5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Anita Roybal
Title	Director
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Email	aroybal@luna.edu

### Submitting Institution

Name of HEI	Luna Community College
Submitting Department	Humanities

### Chief Academic Officer

Name	Sharon Lalla
Email	slalla@luna.edu

### Registrar

Name	Henrietta Maestas
Email	hmaestas@luna.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	SPCH
Number	112
Title	Interpersonal Communication
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

Yes

**Co-requisite Course**

Prefix	ENG
Number	106
Title (if applicable)	Reading & Writing for Inquiry

**New Mexico Common Course Information**

Prefix	COMM
Number	1213
Name	Interpersonal Communication

**A. Content Area and Essential Skills**



## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Define the nature, elements, and axioms of interpersonal communication including the interaction between culture and interpersonal communication. 2. Explain how the concept of self, the process of perception, the act of listening, and the use of verbal and nonverbal messages determine the quality of interpersonal communication. 3. Demonstrate an understanding of the universals of interpersonal relationships, including knowledge of the growth and deterioration processes of relationships. 4. Discuss the major types of interpersonal relationships, including those of friendship, love, family and workplace, and how conflict and power issues can be handled effectively in each.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

- Exhibit effective interpersonal communication in a variety of settings

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

In this course the student will examine a variety of genres and media awareness. The student will examine assigned texts from case studies and popular press articles to analyze them for the aspects of relational communication. The student will write an essay to identify the transactional model of communication. They will analyze the breakdown of relational communication as it relates to business setting or from a parent and child relationship. Their assessment will include how they've found miscommunication issues in their workplace or with their parent, and how they could improve on it. The student will analyze messages of articles based on their knowledge of Interpersonal Communication Theories that they are taught in this class. The student will create a journal in which they'll analyze and discuss their findings. They will share with their classmates their findings to discuss the similarities and differences of their relational topics.

For their understanding of evaluation and production of arguments, students will create a written project that focuses on an aspect of Interpersonal Communication. The student will submit an annotated bibliography as a guide to help with their argument. Their project will contain reasons to support their claims. Their analysis will contain examples of their understanding of deductive and inductive reasoning, to further demonstrate their understanding of the components of Interpersonal Communication.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The student will apply Interpersonal Communication skills to a group project. For example one project could involve creating a mobile truck food-catering business. The problem is how to address conflict involved in creating such a business. The group is responsible for brainstorming on how to create this business, and who they will hire. The students will be responsible for assessing data with a similar business model. The student will adapt their critical thinking skills by analyzing the challenges they'll face by creating such a business based on the concepts they've studied throughout the semester. Additionally they will conduct surveys and focus groups to learn more about their hypothetical endeavor and the relational challenges they may encounter as an owner of the company. The group will create a report detailing their conclusions, solutions, and outcomes as it relates to Interpersonal Communications from a business perspective. This project is designed to help the student see the value of studying Interpersonal Communications from a small-business perspective. It also offers the student specific guidelines on how to utilize this connection to strengthen their relational communication skills regarding self, emotions, verbal / nonverbal communication and listening in a business climate.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

The student will demonstrate their ability to be a conscientious user of the digital sources found online. One project has them creating an annotated bibliography from the internet with the topic of the components of Interpersonal Communication. Their goal is to find credible sources and to be able to distinguish their significance. The student will write an essay to demonstrate their ability to explain the evidence of reliable online sources, versus those of mediocre material, and how being a critical reader of digital online material will benefit them in their personal and professional lives relating to Interpersonal communication.

As it relates to information structures, in order for a student to be an effective information user and communicator there are basic informational, computer, media, and visual skills that they can apply in relation to the study of Interpersonal Communication. They will demonstrate these skills in classroom discussion, and in a written essay that emphasizes these skills. The student will research for online sources and academic digital data bases to gain a better understanding of the importance of researching for trustworthy digital sources; which enables them to explain why digital and informational literacy will benefit them in the professional careers and personal life.

As for research, the student will analyze a problem in its relation to Interpersonal Communication. Student groups will examine a problem involving relational issues. They will demonstrate through their research, that they can collect credible evidence from online sources; like academic data bases. Their project also involves comparing and contrasting sources from digital resource, and explaining the challenges and success encountered examined in their research.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

NA

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 25 2019



## Upload Assessment

Completed - Mar 25 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Speech 112 Assessment

Filename: Speech\_112\_Assessment.docx Size: 12.9 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000119

Stephen Mathewson - smathewson@cnm.edu  
NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy

2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	David Chavez
Title	Full-Time Faculty
Phone	224-4000 ext. 52257
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### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	PHIL
Number	2120
Title	Biomedical Ethics
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	PHIL
Number	2120
Name	Biomedical Ethics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Identify strengths and weaknesses of various ethical theories and conceptions of rights.
2. Apply various ethical theories and conceptions of rights to current issues within biomedical ethics.
3. Summarize and examine various positions and arguments in current issues within biomedical ethics.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.



## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

- (1) In doing the attached research project, students delineate a problem or question by (a) identifying a substantive issue in contemporary ethics and health care or health policy, (b) framing their project within the context of contemporary research on their chosen topic, and (c) framing their topic in connection to competing theories and principles in the field of ethics.
- (2) Students identify and gather the necessary information to address the problem by (a) finding materials related to the topic, using libraries as well as the internet; (b) Creating an annotated bibliography using MLA format; and (c) utilizing a minimum of 20 sources.
- (3) Students evaluate evidence, proposals, and arguments for credibility and probable truth by (a) including a minimum of two pages, typewritten review of the ethics on both sides of their topic and (b) citing any data, quotes, or information not found in at least three sources.
- (4) Relatedly, students develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation by (a) summarizing and responding to a diverse sample of professional viewpoints and arguments from both sides of their chosen topic and (b) incorporating contemporary ethical theory in their weighing of conclusions and arguments.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

- (1) In this course, students demonstrate intercultural reasoning and intercultural competence by: (a) explaining and analyzing different (and possibly conflicting) historical and cultural perspectives on moral value; (b) Explaining and critically evaluating the thesis of moral relativism; and (c) considering possible ways of adjudicating, in a principled fashion, between conflicting moral theories and frameworks.
- (2) Students address sustainability and the natural and human worlds by (a) addressing contemporary issues in biomedical ethics, including issues about how biomedical practices can potentially impact the environment.
- (3) In the attached research project, students demonstrate ethical reasoning by researching, explaining, and evaluating diverse scholarly views on a topic in contemporary ethics and health care or health policy. Relatedly, student must account for ethical theories and principles in the field of ethics as a the backdrop for their own evaluation of their chosen problem.
- (4) In this paper, students demonstrate awareness of civic discourse, including problems that hinder progress by, among other things: (a) identifying, researching, and weighing in on a problem in contemporary ethics and health care or health policy; (b) summarizing and responding to scholarly views and arguments on the topic; and (c) proposing their own reasoned solutions to public problems.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

(1) In this paper students recognize the authority and value of information by: (a) accessing scholarly works to inform their writing, (b) producing a substantive document in which they must properly credit and cite all external sources of ideas, explanations, and quotations (a strict non-plagiarism policy is explained and enforced); and (c) students apply an appropriate citation style.

(2) Students understand, communicate, create, and design in digital environments by: (a) constructing digital documents following appropriate styles and formatting; (b) communicate with instructor electronically following proper conventions; and (c) utilize Blackboard to access various course materials about biomedical issues and problems.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHIL 2120 Research Project

Filename: PHIL\_2120\_Research\_Project.pdf Size: 60.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000038

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



Application Form

Completed - Mar 15 2019

## Application Form

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## Essential Skills

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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17**,

**2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
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### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

### Institutional Course Information

Prefix	GEOL
Number	1110
Title	Physical Geology
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	GEOL
Number	1110L
Title (if applicable)	Physical Geology Lab

**New Mexico Common Course Information**

Prefix	GEOL
Number	1110
Name	Physical Geology

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Recall, describe or explain geologic vocabulary.
2. Identify or explain aspects of the geologic time scale and compare the uses and limitations of relative and absolute dating.
3. Recognize or explain the evidence used to support the theory of plate tectonics. Describe or identify how plate tectonics is related to the structure and features of the Earth.
4. Describe the formation of, and describe, compare, and classify minerals.
5. Identify or describe the three main rock types, how each forms in the context of the rock cycle and what each indicates about its environment of formation.
6. Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.
7. Describe or discuss the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
8. Recognize or describe the geologic processes involved in the formation and concentration of geologic resources.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students are asked critically think about topics in geology throughout the course. As an example, in one assignment student is asked to research oil well fracking as used today in the energy industry today and decide if it is a good or bad practice (problem setting). Students research the topic in the textbook and on-line; they include the physical process, the chemicals used, fresh water usage versus formation water usage, the disposal of waste, the benefits to the economy, and the short/long term risks to the environment (evidence acquisition). The student then compiles this research into a pro versus con listing, and analyzes the benefits and hazards to civilization. Student also evaluates each internet source for suspected credibility and reliability (evidence evaluation). Students submit a written report, including the pro/con list in table or bullet point format. Finally, the student takes a stand by answering one question ‘to frac or not to frac’. They must justify this decision, in their report, based on conclusions drawn from their research (reasoning/conclusions).

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students complete quantitative assignments throughout the term. In one lab activity, students perform a kitchen experiment on reservoir rock pore volume; the hands-on lab is complemented by textbook and on-line research. Students fill a container with different-sized round objects (e.g. sand, marbles, golf balls). Students then add water to fill the container and measure the amount of water required to fill it for each sized object. Students record the volumes in a data table, and use the table to decide which size object held the most water (communication/representation). Student then addresses the following question based on their research and experiment and submits a written report to include their table. “Your instructor claims that the smaller the rounded grains are in the container (reservoir rock) the more fluid is present because there are more pore spaces. Does your research and experiment support my statement?” (analysis of quantitative arguments). Finally, students are asked to relate these experimental results to drinking water reservoirs being drilled today for human needs. Basically, students are asked to evaluate rock characteristics we need to look for in the hopes of finding fresh water (application of quantitative model).



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students research rare earth elements, their current uses for clean energy generation (e.g., wind towers, solar panels), as well as current suppliers of these resources (e.g., China). Students then write a short report addressing the impact of high demand for rare earth elements, addressing the environmental impacts on developing countries, and comparing the environmental benefits (e.g. reduced greenhouse gas emissions) and the environmental degradation from the mining process (sustainability of natural and human worlds). The assignment reminds students that these developing countries do not have well-developed environmental protections, human right protections, and labor laws. Students then address the ethical components of developed countries encouraging mining of the rare earth elements in developing countries (ethical reasoning).

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 10 2019



Upload Assessment

Completed - Mar 15 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

GEOL 1110 assignment

Filename: GEOL\_1110\_assignment.docx Size: 12.9 kB



## Upload Rubric

Completed - Mar 15 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### GEOL 1110 Rubric

Filename: GEOL\_1110\_Rubric.docx Size: 13.4 kB

## Application: 0000000173

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	G0
Number	213
Title	American Government
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	POLS
Number	1120
Name	American National Government

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the historical and political foundations of the government of the United States;
2. Explain the precursors to, and the development and adoption of the United States Constitution;
3. Explain the United States federal system, the basics of federalism, and the changing relationship of state and federal power;
4. Describe the power, structure and operation of the main institutions of government, namely the legislative, executive, judicial, and the federal bureaucracy;
5. Explain the development and role of political parties and interest groups;
6. Identify the constitutional basis of civil rights and civil liberties and their changing interpretation;
7. Describe the role of demographics, public opinion and the media in American politics.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students pose questions about the goals, purposes, and limitations of government as set forth in the U.S. Constitution while applying foundational documents to contemporary political and social debates.

Evidence Evaluation:

Instructors promote critical thinking skills related to reading and writing about American National Government. Students analyze various primary and secondary source document/readings in order to describe and explain the development of American Government.

Reasoning/Conclusion: Using various forms of news and media coverage and evidence gathering, students practice using support and evidence for their positions and addressing opposing views during scheduled class discussions, small group debates, live simulations, case studies, and discussion boards. Students further demonstrate these skills in both long and short essays that require persuasive and argumentative writing strategies. Instructors assess critical thinking skills using rubrics.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Instructors promote civic engagement and awareness directly by giving students a Civic Engagement quiz at the beginning of the course. Students are expected to submit their results from the quiz and to research civic engagement activities in their locality.

Ethical reasoning: Students examine the role of differing ethical beliefs in the context of American government and laws, including an examination of Hobbes and Locke. Students address questions, such as: How are ethical beliefs in dialogue with laws? How does the government promote or challenge ethical thought and behavior?

Collaboration skills, teamwork and value systems: Following instructor-led discussion of civic engagement activities and opportunities either in-class or online, students will continue to develop their civic awareness through small group activities (planned debates and/or simulations), experiential learning opportunities presented during the course, as well as through reading and writing assignments. Students' Personal and Social Responsibility skills are assessed by the Instructor through an essay, which is graded with a rubric.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Instructors use Library Resources to educate Students about the Library, its resources, and the benefits of using the Library to conduct research over generic search engines such as Google or Chrome. Standards and methods of MLA and APA formatting are presented and in multiple assignments students are required to gather and present their research according to those standards. Topics such as credibility, copyright, intellectual property and fair use are presented and discussed in preparation for the research assignments.

Digital Literacy: Produced with computers and electronic research resources, Annotated Bibliographies are compiled on topics both assigned and chosen in order to demonstrate the students' abilities to gather evidence from various sources, evaluate the credibility and relevance of source materials, summarize and order source materials correctly for research purposes. Gathering and summarizing multiple primary source readings from various perspectives allows students the opportunity to demonstrate their abilities to evaluate credibility and relevance of source materials in order to obtain a multi-faceted understanding of American Government.

Information Structure: Annotated Bibliographies are compiled on topics both assigned and chosen in order to demonstrate the students' abilities to gather evidence from various sources, evaluate the credibility and relevance of source materials, summarize and order source materials correctly for research purposes. In addition to Annotated Bibliography projects, these skills are demonstrated in developing and submitting Document Based Essays and other wiki-based assignments. Almost every course assignment or activity is assessed by the Instructor using a rubric with a component that addresses these skills.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided evidence.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**



## Date

Mar 20 2019



### Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Government Sample Assignment

Filename: Government\_Sample\_Assignment.docx Size: 12.3 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000150

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCC Meeting.

### Contact Information

Name	Dallas Hulse
Title	Professor of English
Phone	5754922833
Email	dhulse@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	EN
Number	223
Title	Types of Literature II
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2515
Name	Types of Literature li

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. demonstrate continued proficiency in ENGL 1120 course objectives.
2. analyze literary works for elements, such as theme, character, plot, setting, symbolism, tone, and imagery.
3. recognize, interpret, analyze, discuss, criticize, and evaluate works of literature created during the period.
4. identify, distinguish, and evaluate authors of the period .
5. interpret, organize, and evaluate knowledge of the period and its relationship to the authors and their works .
6. recognize and use the relevant vocabulary of literary criticism and analysis.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting: Instructors provide instruction on critical thinking skills related to reading, writing, and research

throughout the course. Students analyze readings, including fiction, poetry, plays, and nonfiction. With guidance from the instructor, learners engage in dialogue to interpret the readings while also discussing the cultural and historical significance of the texts.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine. Students use secondary sources as evidence in analyzing primary sources (works of literature) in a research paper.

Reasoning/Conclusion: Students use support and evidence from primary and secondary sources to defend a thesis

statement while avoiding common logical fallacies. Students also practice critical analysis by commenting on each

other's rough drafts for essays and the research paper.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students can identify and analyze personal and social justice

issues in a variety of texts, including a diversity of social and cultural contexts.

Ethical reasoning: Students analyze texts for ethical thought and action, including individual actions of characters and separating individual character thought and action from the commentary and thematic implications offered by the text as a whole. Students discuss literature as a social activity that reflects, promotes, and critiques values while comparing and contrasting these perspectives with belief systems currently operating in the world.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact

and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments. Instructors provide students with local opportunities to interact and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The research paper in this course is the centerpiece assignment and is worth a minimum of 30% in all sections. Instructors present students with lessons on finding, evaluating, and citing sources in analytical and argumentative writing. Avoiding plagiarism through ethical use of sources and citation is a key topic.

Instructors require the use of professional sources from reputable publishers and peer reviewed journals. Student work is evaluated for ethical use of sources with Turnitin. Instructors offer guidance on interpreting Turnitin reports to help students responsibly and ethically cite sources.

Digital Literacy: Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers.

Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the research paper.

Information Structure: Students practice paraphrasing and summarizing information from professional secondary sources. Students integrate multiple primary and secondary sources into a research paper structured around a developed thesis statement and topic sentences in MLA format.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis of the literary work in question.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### EN223 Assessment

Filename: EN223\_Assessment.doc Size: 737.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000232**

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

#### Application Form



The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Miguel Vicens
Title	Associate Dean School of Business
Phone	575-538-6403
Email	Miguel.vicens@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	ECON
Number	201
Title	PRINCIPLES OF MACROECONOMICS
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ECON
Number	2110
Name	PRINCIPLES OF MACROECONOMICS

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for ECON 2110

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Explain the concepts of opportunity costs, comparative advantage and exchange; Demonstrate knowledge of the laws of supply and demand and equilibrium and use supply and demand curves to analyze responses of markets to external events; Explain the circular flow model and use the concepts of aggregate demand and aggregate supply to analyze the response of the economy to disturbances; Explain the concepts of gross domestic product, inflation, and unemployment and how they are measured; Describe the determinants of demand for money, the supply of money and interest rates and the role of financial institutions in the economy; Define fiscal policy and monetary policies and how these affect the economy; Explain foreign exchange rates and markets and the balance of payments; Explain how trade restrictions affect the economy.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Distinguish facts versus opinions and use a theoretical view to argue in favor or against economic policies or the role of a country in the world economy.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The class introduces models used to reason by analogy. Students draw conclusions based on similarities, so long as the differences not matter. Students will make distinctions between facts and opinions and use the scientific method to draw conclusions about economic issues that affect the U.S. and its interactions with the rest of the world.

***Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students recognize the similarities and differences among countries on the macroeconomic decisions they make and how economic policies are created and implemented. Students also recognize theories of equity, ethics, and fairness involved in international trade and the impact of the sustainable allocation of scarce resources. In addition, students are able to understand the role of individuals in the economy, the power of the consumer and how fiscal and monetary policy decisions are made. The students engage in collaborative activities that teach the value of positive interactions despite backgrounds, so they get a better understanding of the importance of cultural awareness in globalized business transactions.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f:/g/Curriculum%20&%20Instruction%20Committee/EJEtxsUi0CJHkV5-rKUrPnEBVukNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 22 2019



### Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## ECON 201 ONLINE PRINCIPLES OF MACROECONOMICS FALL 2018

Filename: ECON\_201\_\_ONLINE\_PRINCIPLES\_OF\_MACROE\_33Arajw.docx Size: 77.3 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000116

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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essential skills. Three essential skills are associated with each of six content areas:

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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Gangadhar Acharya
Title	Full-Time Faculty and Course Coordinator
Phone	(505)224-4000 Ext 53550
Email	gacharya@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	MSE

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	MATH
Number	1350
Title	Introduction to Statistics
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)



## New Mexico Common Course Information

Prefix	MATH
Number	1350
Name	Introduction to Statistics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the general concepts of statistics.
  - a. Explain and evaluate statistics used in the real world (from a news article, research project, etc.).
  - b. Use statistical vocabulary appropriately.
  - c. Distinguish between descriptive and inferential statistics.
  - d. Distinguish between qualitative and quantitative data.
  - e. Distinguish between populations and samples, and parameters and statistics.
  - f. Give examples of independent and dependent variables.
2. Presentation and description of data.
  - a. Present data graphically using histograms, frequency curves and other statistical graphs.
  - b. Interpret graphs of data, including histograms and shapes of distributions.
3. Summarize data using measures of central tendency and variation.
  - a. Calculate and interpret the mean, median, and mode to describe data.
  - b. Calculate and interpret range, variance, and standard deviation to describe data.
4. Present the concepts of probability.
  - a. Interpret basic probabilities.
  - b. Calculate probabilities using compound probability rules and the binomial distribution.

- c. Calculate probabilities using the standard normal distribution and relate them to areas under the curve.
- d. Determine if the binomial distribution can be approximated with the normal distribution.
- e. Describe the relationship between the sampling distribution and the population distribution.
- f. Use the central limit theorem to approximate the probability distribution and calculate probabilities.
- 5. Compute point and interval estimates.
  - a. Determine the confidence interval for a parameter.
  - b. Interpret the confidence level and margin of error.
  - c. Determine whether a statistical technique is appropriate under stated conditions.
- 6. Perform hypothesis tests.
  - a. Determine whether a statistical test is appropriate under stated conditions.
  - b. Identify null and alternative hypothesis.
  - c. Perform and interpret statistical tests (e.g. z-test, t-test, one-tailed and two-tailed, one-sample, two-sample) and determine whether data is statistically significant.
  - d. State the conclusion of a hypothesis test.
  - e. Interpret a p-value as compared to a significance level.
  - f. Explain why a test can lead us to reject a null hypothesis, not accept one.
  - g. Distinguish between Type I and Type II errors.
- 7. Analyze data using regression and correlation.
  - a. Explain the difference between correlation and causation.
  - b. Construct and interpret scatter plots.
  - c. Calculate and interpret the linear correlation coefficient.
  - d. Determine and use the equation of a least-squares regression line between two variables to make predictions.
  - e. Interpret the meaning of the coefficient of determination.
- 8. Optional topics.
  - a. Inter-quartile range, box-plots, stem-and-leaf plots.
  - b. Combinations and permutations.
  - c. The Poisson distribution.
  - d. Statistical power.
  - e. Chi-square.
  - f. Analysis of variance.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will communicate an awareness of a variety of mathematical genres and mediums through written explanations, statistical diagrams and graphs, and in-class discussions. In this course, students are introduced to several statistical methods: from gathering data using different types of sampling to performing hypothesis tests and interpreting results.

Students will be assessed for mathematical understanding and evaluating mathematical messages when they develop strategies for reading through scenarios to identify key components within the problem. For example, in the step of data collection, students will read a description of how sampling was chosen and then determine the type of sampling method applied (see the attached assessment).

Inferential statistics come later in the semester. Students will learn how to evaluate confidence intervals and argue hypothesis tests with the goal of either supporting or disproving a given claim. In their solution, students use of formal statistical language. They will use complete sentences that are contextualized for each problem when concluding their results. Finally, throughout the course, students will be assessed for their ability to communicate statistics through visual representation of data in the form of tables, graphs and diagrams when appropriate.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students naturally use critical thinking in all sections of statistics when solving problems. This is directly paired with their ability to set a problem, which is the first step in developing their critical thinking skills in order to determine an appropriate strategy to use toward a solution. For example, an important value in statistics is the standard deviation of a distribution. However, the formulas used for standard deviation vary depending on whether individual or grouped data is given. Furthermore, students learn how standard deviation is related to standard error and how the calculation of the standard error changes when dealing with a population or sample. In each case (standard deviation or standard error calculations) students will acquire evidence to determine the appropriate formula for derivation. Students will use regression lines to create a predictive model for future values corresponding to a given input. The first step is to identify, from paired data, which data will be represented by the independent variable and which data will be the dependent variable (and thus predicted from the independent variable). Then students will gather the data into two lists and evaluate that evidence to determine an appropriate calculator command to create a linear model for the data set. Finally, students will use this model to make reason through their predictions as well as conclude how and when a slope and y-intercept of their linear model can be interpreted under different circumstances.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students use quantitative reasoning in all sections of statistics while solving problems and interpreting the results. In this course, students learn to collect data and represent collected data by using diagrams (pie chart, bar diagram) and graphs (histogram, frequency curve, ogive), as a first step for the quantitative reasoning. Analysis and application of the given or computed value of parameter/statistics is another knowledge what students grasp in this course. For example, after calculating mean and median, students identify the shape of the distribution by comparing the computed values of mean and median. Finally, students apply an appropriate quantitative model from the given data set and use such model to estimate and predict unknown values in the real-world and given problem situation. For example, students develop a regression model for the given bivariate data and use that model to argue the unknown value for the given value of the known variable. Similarly, they compute the correlation coefficient and identify the relationship between two or more variables (value near 1-perfect positive correlation, a value near -1 perfect negative correlation and so on). In testing of hypothesis, students will be assessed as they compute p-value and compare calculated p-value with the standard limit (given level of significance) for the unusual probability and explain why the written null hypothesis is unusual/usual.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Math 1350 Assessment

Filename: Math\_1350\_Assessment.docx Size: 17.1 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000242**

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

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## Essential Skills

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	M. J Burns
Title	Adjunct Instructor, Natural Sciences & Criminal Justice
Phone	575-535-4499
Email	burnsm@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PHSC
Number	1120
Title	Forensics I and Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	PHSC
Number	1120L
Title (if applicable)	Forensic Science I lab - 1:00 Credit Hour

**New Mexico Common Course Information**

Prefix	1120/ L
Number	Forensics I
Name	Forensics I and Lab

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**



**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for PHSC 1120 - Forensics I / PHSC 1120L -Forensics I lab

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Shared student Learning Outcomes:

1. Develop and utilize skills of scientific inquiry, asking questions, gathering, analyzing and interpreting data, drawing conclusions, predicting, and communicating results.
2. Develop and awareness of forensic science issues that may impact learners and introduce the different techniques used to analyze a variety of crimes.
3. Evaluate information and interpret graphs and charts to make informed forensic science decisions.
4. Enhance academic skills including the use of electronic resources.

ALAS General Education Outcomes: BIG QUESTIONS

- 1.What is Truth?
2. What is Justice?
3. What is it to be Human?
4. What is a Good Life?

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

Problem Setting: Forensic Science is driven by situational casework, the "Problem" is established with the existence of the case. Evidence Acquisition: Students will expected to acquire evidence based on the actual crime scene and case information, this is accomplished through learning the procedures for actually processing a crime scene. Evidence Evaluation: Once again, this is heavily dependent on scientific methodology with the necessary legal "Filters" and ethical reasoning. Reasoning and Conclusion: Based on the aforementioned scientific methodology with the necessary legal "Filters" and ethical reasoning, conclusion/resolution follows.

### **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 - 300 words.*

Quantitative Information: This course will require both development and examination/analysis of significant amounts of quantitative information. Analysis of Quantitative Arguments: "Weighting" of evidence and information requires collaborative effort for case resolution. Application of Quantitative Model(s): Scientific methodology and quantitative modeling are extensively utilized in case analysis and summary reporting.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Ethical Reasoning: Students will be challenged with real-life case and situational examples requiring deuctive reasoning and ethical responsibility. Collaborative Skills: Students will expected to develop strong working relationships which cross multi-disciplinary lines to achieve goals. Civic Discourse: Forensic Science requires a very good knowledge of both law and society.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CJHkV5-rKUrpNEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**3A- GEOL 2110-2110L Historical Geology & Lab -Ex Asses 1 -WNMU**

Filename: 3A-\_\_GEOL\_2110-2110L\_Historical\_Geolo\_x7u8OEE.docx Size: 320.9 kB



Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Application: 0000000029

Colleen Lynch - colleen.lynch@sfcc.edu  
NM General Education Curriculum



Application Form

Completed - Mar 13 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

#### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

#### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

#### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

#### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

#### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

#### Institutional Course Information

Prefix	CHEM
Number	1225
Title	General Chemistry II for STEM Majors
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	CHEM
Number	1225L
Title (if applicable)	General Chemistry II for STEM Majors Laboratory

**New Mexico Common Course Information**

Prefix	CHEM
Number	1225
Name	General Chemistry II for STEM Majors

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the intermolecular attractive forces that determine physical properties and phase transitions, and apply this knowledge to qualitatively evaluate these forces from structure and to predict the physical properties that result.
2. Calculate solution concentrations in various units, explain the effects of temperature, pressure and structure on solubility, and describe the colligative properties of solutions, and determine solution concentrations using colligative property values and vice versa.
3. Explain rates of reaction, rate laws, and half-life, determine the rate, rate law and rate constant of a reaction and calculate concentration as a function of time and vice versa, as well as explain the collision model of reaction dynamics and derive a rate law from a reaction mechanism, evaluating the consistency of a mechanism of a given rate law.
4. Describe the dynamic nature of chemical equilibrium and its relation to reaction rates, and apply Le Chatelier's Principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures as well as describe the equilibrium constant and use it to determine whether equilibrium has been established, and calculate equilibrium constants from equilibrium concentrations and vice versa.
5. Describe the different models of acids and base behavior and the molecular basis for acid strength, as well as apply equilibrium principles to aqueous solutions, including acid-base and solubility reactions, and calculate pH and species concentrations in buffered and unbuffered solutions.
6. Explain titration curves and speciation diagrams, as well as calculate concentrations of reactants from the former and determine dominant species as a function of pH from the latter.
7. Explain and calculate the thermodynamic functions, enthalpy, entropy and Gibbs free energy, for a chemical system, and relate these functions to equilibrium constants and reaction spontaneity; balance redox equations, express them as two half reactions and evaluate the potential, free energy and equilibrium K for the reaction, as well as predict the spontaneous direction.
8. Construct a model of a galvanic or electrolytic cell; or describe organic reactions.
9. Describe bonding theories, such as valence and molecular orbital theory.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The critical thinking skills are addressed through a laboratory case study where students work in groups, each group is required to formulate a hypothesis and set up an experiment using the proper scientific method and technique. Data acquisition is done by conducting measurements and recording observations. Students analyze and evaluate the data and draw conclusions based on the acquired evidence. Students submit a written report on each study and do in-class oral presentation where fellow students demonstrate their critical thinking skills by engaging in discussion on the presented topics. Assessment is done by a rubric and in-class presentations and discussions.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students apply quantitative models as they solve problems in a number of different topics such as such as kinetics, chemical equilibrium, acids and bases, thermodynamic properties, and electrochemistry. Students communicate and represent quantitative information and analyze quantitative arguments through in-class practice problems, homework, and lecture discussion. Assessment is done by homework assignments, and class discussion participation and in-class examinations.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students investigate the social and economic impacts of issues such as acid rain, global warming, and climate change, corrosion and pollution problems (sustainability and the natural and human worlds). This is done by in-class discussion and practical experiments as part of the laboratory project research. Students develop collaboration and teamwork skills as they work together in groups as teams to complete their laboratory research project and present their work in a written report as well as class presentation and discussion. They discuss chemical basis of such issues and recommend ways to lessen the impact or eliminate these problems.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 10 2019



### Upload Assessment

Completed - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

chem 1225 assignment

Filename: chem\_1225\_assignment.pdf Size: 56.3 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000163

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCC Meeting.

### Contact Information

Name	Dallas Hulse
Title	Professor of English
Phone	5754922833
Email	dhulse@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	EN
Number	223D
Title	World Literature II
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2660
Name	World Literature II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Identify and comprehend key authors and literary works from the 1600s to the present.
2. Understand each text's historical and cultural context.
3. Identify and analyze a variety of literary forms, including poetry, plays, and philosophical and religious texts.
4. Compare works from different cultures and historical periods examining genre, style, and content or theme.
5. Analyze how literary works reflect historical, national, cultural, and ethnic differences.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting: Instructors provide instruction on critical thinking skills related to reading, writing, and research

throughout the course. Students analyze readings, including fiction, poetry, plays, and nonfiction. With guidance from the instructor, learners engage in dialogue to interpret the readings while also discussing the cultural and historical significance of the texts.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine. Students use secondary sources as evidence in analyzing primary sources (works of literature) in a research paper.

Reasoning/Conclusion: Students use support and evidence from primary and secondary sources to defend a thesis

statement while avoiding common logical fallacies. Students also practice critical analysis by commenting on each

other's rough drafts for essays and the research paper.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students can identify and analyze personal and social justice

issues in a variety of texts, including a diversity of social and cultural contexts.

Ethical reasoning: Students analyze texts for ethical thought and action, including individual actions of characters and separating individual character thought and action from the commentary and thematic implications offered by the text as a whole. Students discuss literature as a social activity that reflects, promotes, and critiques values while comparing and contrasting these perspectives with belief systems currently operating in the world.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact

and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments. Instructors provide students with local opportunities to interact and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The research paper in this course is the centerpiece assignment and is worth a minimum of 30% in all sections. Instructors present students with lessons on finding, evaluating, and citing sources in analytical and argumentative writing. Avoiding plagiarism through ethical use of sources and citation is a key topic.

Instructors require the use of professional sources from reputable publishers and peer reviewed journals. Student work is evaluated for ethical use of sources with Turnitin. Instructors offer guidance on interpreting Turnitin reports to help students responsibly and ethically cite sources.

Digital Literacy: Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers.

Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the research paper.

Information Structure: Students practice paraphrasing and summarizing information from professional secondary sources. Students integrate multiple primary and secondary sources into a research paper structured around a developed thesis statement and topic sentences in MLA format.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis of the literary work in question.



#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### EN Assessment

Filename: EN\_Assessment\_zirJNKy.doc Size: 737.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000244**

Suzanne Balch - suzbal62@hotmail.com

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

#### Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Suzanne Balch Lindsay
Title	Asst VP Academic Affairs
Phone	5755622314
Email	Suzanne.Balch@enmu.edu

### Submitting Institution

Name of HEI	ENMU Portales
Submitting Department	Physical Sciences

### Chief Academic Officer

Name	Jamie Laurenz
Email	Jamie.Laurenz@enmu.edu

### Registrar

Name	DeLynn Bargas
Email	DeLynn.Bargas@enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	PHYS
Number	151LP
Title	General Physics Laboratory
Number of credits	1

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	PHYS
Number	151 P
Title (if applicable)	General Physics

## New Mexico Common Course Information

Prefix	PHYS
Number	1230L
Name	Algebra-Based Physics I Lab

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the scientific method.
2. Test ideas using modern laboratory equipment.
3. Estimate experimental uncertainties using statistical methods.
4. Use computers to analyze and report laboratory results.
5. Draw appropriate conclusions from quantitative scientific observations.
6. Accurately and clearly communicate the results of scientific experiments.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Laboratory experiments usually involve the testing of a physical idea.

1. Numerous kinesthetic operations are performed, including measurements of physical quantities. Each of these operations is essentially a problem that must be delineated. The problem is to ensure that the kinesthetic operations and measurements are accomplished in such a way as to accurately correspond to the theory being tested. For example, the theory of the pendulum specifies that a massive, point particle be suspended from a point. The problem is “what is the length of the pendulum; the point of suspension to the top, middle, or bottom of the pendulum bob?”
2. The experiment itself consists of the acquisition of evidence in the form of measurements of physical quantities.
3. The validity of the data is continually evaluated during the course of acquisition. Judgments regarding inherent uncertainties versus avoidable error must be made.
4. Conclusion: In the end, the student must take the pile of numbers that have been collected and infer truth or reality from those numbers.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

1. As part of data analysis and laboratory reports, students often present their results by means of graphs and writing.
2. Students in each experimental group interpret, analyze, and critique information and calculations of other members of their group.
3. Every lab requires the application of a theoretical model to predict the results of the experiment.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

1. Civic discourse: Perhaps the greatest social responsibility in scientific work is the willingness to call accepted data and ideas into question. Once or twice a semester, students are assigned a lab which tests an idea which is wrong, despite having been promulgated by a recognized expert. Student lab reports are examined for evidence that they, without being told of the expert's error, have discovered for themselves that the self-evident idea is wrong. An example is Galileo's statement that the period of a pendulum is independent of the amplitude. This idea is violated weakly for larger amplitudes but students are generally unaware of this fact. Sufficiently careful measurements will show that Galileo was wrong.
2. Collaborative skills: Each lab requires group to act as a team in the collection and analysis of data.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

Pending.

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 22 2019



### Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### PHYS 151L - 1230L Algebra-based Physics I Lab ex assess

Filename: PHYS\_151L\_-\_1230L\_Algebra-based\_Physic\_VUfCEdM.pdf Size: 471.6 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000178

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulse
Title	Professor of English
Phone	5754922833
Email	dhulse@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu



## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	HI
Number	113
Title	United States History to 1877
Number of credits	(No response)

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	HIST
Number	1110
Name	United States History I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will be able to EXPLAIN in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries for the history of the United States from the pre-colonial period to the immediate aftermath of the Civil War. Bloom Taxonomy's Cognitive Process: REMEMBER AND UNDERSTAND
2. Students will DISTINGUISH between primary and secondary sources, IDENTIFY and EVALUATE evidence and EMPATHIZE with people in their historical context. Bloom Taxonomy's Cognitive Process: ANALYZE, REMEMBER, EVALUATE, CREATE
3. Students will SUMMARIZE and APPRAISE different historical interpretations and evidence in order to CONSTRUCT past events. Bloom Taxonomy's Cognitive Process: UNDERSTAND, EVALUATE, APPLY
4. Students will IDENTIFY historical arguments in a variety of sources and EXPLAIN how they were constructed, EVALUATING credibility, perspective, and relevance. Bloom Taxonomy's Cognitive Process: REMEMBER, UNDERSTAND, EVALUATE
5. Students will CREATE well-supported historical arguments and narratives that demonstrate an awareness of audience. Bloom Taxonomy's Cognitive Process: CREATE, APPLY
6. Students will APPLY historical knowledge and historical thinking "in order to infer what drives and motivates human behavior in both past and present. "Bloom Taxonomy's Cognitive Process: APPLY, ANALYZE

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students pose questions about the goals and purposes of studying the past in the context of specific historical events.

Evidence Evaluation:

Instructors provide instruction on critical thinking skills related to reading and writing throughout the course. Students analyze readings from primary and secondary sources by examining the evidence and reasons used by authors while also learning to recognize bias, motivations, historical influence, and interpretation, and how information or lack of information affects beliefs and written records.

Reasoning/Conclusion:

Learners engage in conversation with each other about the issues raised in the readings while the instructor facilitates conversation via live conversation and/or online discussion boards, such as Perusall. Students practice using support and evidence while addressing opposing views or problematic statements with unverifiable interpretations. Students further practice critical thinking by commenting on each other's assessments of the readings and topics being discussed. Instructors assess the quality of critical thinking with a rubric.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global

Sustainability and the natural and human worlds: Students are assigned a historical person to embody through a specific event or negotiation within history. Students read primary and secondary sources to engage in-class debates, discussions, and negotiations as their assigned person. Students work together in collaborative groups/factions towards common goals, as well as to achieve personal objectives. Students will research the various topics of the scenario to construct arguments, rebuttal potential opposition, and understand the historical background.

Ethical reasoning: Students examine the role of differing ethical beliefs in the context of American history: How are ethical beliefs from the past in dialogue with ethics today? How can knowledge of the past inform ethical decision making today? Is knowledge of the past necessary to engage in thoughtful ethical analysis. Students consider these and other questions in the context of specific historical contexts.

Collaboration skills, teamwork and value systems: Collaboratively, students deliver speeches, write pamphlets and newspaper articles, write treaties and laws as if they were people from the past, and work together to understand historical points of view by “walking a mile” in someone else’s shoes. Basically, students reenact the past through role playing to arrive at firsthand knowledge of the value systems at work in the past. Student participation, teamwork, and thinking is evaluated with a rubric.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Instructors use Library Resources to educate Students about the Library, its resources, and the benefits of using the Library to conduct research over generic search engines such as Google or Chrome. Standards and methods of formatting are presented and in multiple assignments, students are required to gather and present their research according to those standards. Topics such as credibility, copyright, intellectual property, and fair use are presented and discussed in preparation for the research assignments.

Digital Literacy:

As part of the departmental curriculum, instructors assign a Google Map project where students are required to create a collaborative digital footprint of historical information. Students search online and library databases for their own topics that meet the current week's scheduled topics and create a concise, short encyclopedia entry on the course's Google Map for the rest of the class to read, edit, and study. This facilitates education and discussion on the use of technology to create and learn history and proper citations and source evaluations. In this class students must find, use, and cite sources in MLA or APA format. Instructors assess information and digital literacy in the context of relying information for other students to utilize, proper use of technology and sources, and use a rubric to assess student learning.

Information Structure: Students produce projects that adhere to standard organization of introduction with a thesis, body with clear topic sentences, and conclusion. Students integrate and synthesize primary and secondary sources into their work. History faculty work with faculty in other disciplines to ensure that campus wide communication standards for organization and clarity are upheld.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided evidence to help understand the past and how it affects the present.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



**Upload Assessment**

**Completed** - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**HI 113 Sample Assignment**

**Filename:** HI\_113\_Sample\_Assignment.docx **Size:** 18.4 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000233**

Annemarie Oldfield - annemarie.oldfield@roswell.enmu.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 22 2019

**Application Form**

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Robin Billington
Title	Humanities Dept. Director
Phone	575-624-7252
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### Submitting Institution

Name of HEI	Eastern New Mexico University-Roswell
Submitting Department	Humanities



### Chief Academic Officer

Name	Dr. Ken Maguire
Email	ken.maguire@roswell.enmu.edu

### Registrar

Name	Dr. Linda Neel
Email	linda.neel@roswell.enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	ART
Number	101
Title	Beginning Drawing
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	na
Number	na
Title (if applicable)	na

## New Mexico Common Course Information

Prefix	ARTS
Number	1610
Name	Drawing I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Produce drawings that demonstrate techniques and mechanics of observational drawing.
2. Demonstrate competency in the following practices: measuring and sighting, gesture, contour line, negative space, shape, value, space, volume, plane and texture.
3. Create drawings primarily from observation with black and white traditional drawing media.
4. Demonstrate effective verbal or written response to one's own art and the art of others.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

same as above

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 - 300 words.*

Students create artworks that translate the visual world utilizing line to create a direct representation of the world around them. Students are then required to verbally present their work and elaborate on what worked well during the creation process and to identify areas for improvement. They must also be receptive to and respond to criticism of other students. Learners are required to evaluate other students' work based on the effectiveness of the work and to provide detailed feedback about the genre and media of the work. After this round of feedback has been given, students have the opportunity to apply the feedback to further revise work. The instructor will demonstrate various methods to make the artwork more versatile by modeling different kinds of strokes, various pressures, and other techniques. Students discuss and argue about the finished work as a way to affirm efforts and review the concepts learned. The instructor and students will create critiques/evaluations that are affirmative and discovery based. Students answer the question, "What do you notice first?" about others' artwork. They practice the analysis and interpretation of work. The instructor requires comments that speculate about why we notice something first in visual representations.

The class discusses the visual meanings and for feelings that are observed in a drawing.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students are challenged to think creatively to apply ideas in original ways to their work. Students will demonstrate emotion in their work based on a variety of prompts. They will consider how they will communicate ideas visually and how the work will be received and understood by others. After receiving feedback from students and the instructor, they must consider and problem solve as to what changes they might make to improve the work whether through improvement of the narrative/idea being communicated or through improvements in the quality and application of the techniques. After the first round of feedback has been given, students have the opportunity to further revise work.

Learners will apply analysis and interpretation of the drawing through journal entries. The instructor requires comments that speculate about why viewers first notice certain details about the artwork. The students learn to analyze the effects of color, size, brightness, uniqueness, subject matter, and so on. Students will

Utilizing digital resources, they are also challenged to research their ideas to gain other perspectives and to then record and process those ideas through drawings or examples in their sketch books. During group and individual teacher/student discussions, students share their research process as they present the influences and origins of their ideas.

Each assignment contains necessary elements to complete like filling the page, using various media, size of paper and position of horizon line. This leads to choice about symmetrical or asymmetrical layouts, balance or unbalance, and equal number of elements or not, which can change the feeling that is emoted through the work. Students also deal with working to understand the properties of differing media to make varied drawings in pencil, charcoal and conte crayon.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students are encouraged to slow down when looking at the observable world to pay attention to what they actually see. Beginning students struggle with translating the observable world onto a two-dimensional picture plane and to recognize that they are relying on established symbols and not what is visible. In this course, they begin to develop skills related to how to perceive the world in two dimensional works. Demonstrating cultural awareness, the students will listen to music from various cultures (African, Latino, etc.) and translate the music into an artistic depiction of that culture. Critiques provide an opportunity for reflection and candid assessment of their work and others, and to celebrate successes and take responsibility for correctable deficiencies and catastrophic failures in a constructive manner. During critiques, students are encouraged to slow down, observe, and reflect upon the artwork being discussed to interpret a two-dimensional picture plane in the context of an assignment. This assignment will consist of rendering a drawing that symbolically represents a three-dimensional object.

The skills needed to engage in a critique environment, including both offering and receiving feedback, translates readily to other coursework and life as students gain an understanding about methods by which to listen carefully, humbly receive feedback, and to comfortably deliver constructive assessments in a helpful manner.

Students are encouraged to maintain a clean environment and to take responsibility for their working areas to ready the space for future use by others.

A portion of the work that students produce is displayed in a public area. This allows students to see their work from a different perspective, to engage with the public, and to encourage public discourse about the technical elements and concepts.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan  
under construction

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



**Upload Assessment**

**Completed** - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**Sample Assessment for Design and Drawing Classes**

**Filename:** Sample\_Assessment\_for\_Design\_and\_Draw\_WbXZkgX.docx **Size:** 13.6 kB



**Upload Rubric**

**Completed** - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Sample Rubric for art portfolio**

**Filename:** Sample\_Rubric\_for\_art\_portfolio\_wNHaaAJ.docx **Size:** 14.3 kB

**Application: 0000000063**

Gina Hartwick - hartwick@nmmi.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 15 2019

**Application Form**

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Gina Hartwick
Title	Associate Professor of Mathematics
Phone	5756248159
Email	hartwick@nmml.edu

### Submitting Institution

Name of HEI	New Mexico Military Institute
Submitting Department	Mathematics and Sciences

### Chief Academic Officer

Name	Douglas Murray
Email	dmurray@nmmi.edu

### Registrar

Name	Chris Wright
Email	wright@nmmi.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	MATH
Number	1113
Title	College Algebra
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

Yes

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)



## New Mexico Common Course Information

Prefix	MATH
Number	1220
Name	College Algebra

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Students will build on their knowledge of polynomial, rational, absolute value, radical, exponential and logarithm functions in the following contexts:

1. Use function notation; perform function arithmetic, including composition; find inverse functions.
2. Identify functions and their transformations given in algebraic, graphical, numerical, and verbal representations, and explain the connections between these representations.
3. Graph and interpret key feature of functions, e.g., intercepts, leading term, end behavior, asymptotes.
4. Solve equations algebraically to answer questions about graphs, and use graphs to estimate solutions to equations.
5. Solve contextual problems by identifying the appropriate type of function given the context and creating a formula based on the information given.
6. Communicate mathematical information using proper notation and verbal explanations.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Upon graduation from NMMI, a cadet who has completed coursework in the field of mathematics will be able to:

1. Demonstrate mathematical knowledge and skills.
2. Demonstrate mathematical models to solve problems in a variety of contexts.
3. Employ current technology for individualized learning and problem solving and the preparation of assignments.
4. Exhibit the learning skills necessary to succeed in mathematics.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students are expected to construct written responses to mathematical problems. Written responses should include a statement of the original problem, step by step solution to the problem that is clear to the reader how the answer is formed, and a final statement that answers the question. Correct mathematical notation is required at all times. Stress will be placed on providing an answer to the question, and not just boxing the answer at the end of the problem (which addresses evaluation and production of arguments). Students will also be required to understand the strategy used to solve the problem (which addresses genre and medium awareness).

A written solution requiring the optimization of a quadratic function that describes the motion of a projectile or profit in business would be suited for assessing communication skills. Application and versatility would be addressed since students would need to know how to apply their mathematical reasoning and justifications for the different scenarios. Students will need to extract the relevant facts in the description of the problem (addressing strategies for understanding and evaluating messages), determine whether the quadratic will have an absolute maximum or minimum, find the absolute extrema by locating the vertex, and interpret which coordinate is the extrema, as well as when the extrema will occur. Properties of the quadratic function can be used to explain why there exists just one unique optimal solution.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical thinking is the basis for mathematics and problem solving. Critical thinking is used to evaluate what needs to be solved, construct equations to solve the problem, and interpret the solution in the context of the original problem description. Problems finding the local extrema of quadratics (vertex) or higher ordered polynomials (using calculator) can be represented in applications such as motion of a projectile, area of a region, or cost/revenue/profit in business applications (addresses problem setting). Students will need to determine what is being optimized, and recall the known applicable formulas. The construction of the function will rely on the knowledge of these formulas. Extracting relevant numbers will be essential to building the correct function (addresses evidence evaluation). After solving the problem, students will interpret their algebraic solution in the context of the problem. For example, the  $x$  value found may not necessarily be the answer to the question if the question is what is the max area, height, or profit. The students' answer must answer the question, which addresses reasoning/conclusion. These problem solving critical thinking skills will be assessed through the online learning tools developed by the publisher to get credit for the homework. Additionally, problem solving critical thinking skills will be assessed throughout the semester by written quizzes and exams. The final exam will assess whether the student is able to make connections of all the topics learned throughout the semester and apply appropriate techniques in the appropriate contexts.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

By the end of this course, students will demonstrate a mastery of a variety of quantitative skills related to math literacy. Graphical analysis of linear, quadratic, higher ordered polynomials, rational functions and exponential functions are all examples of representations of quantitative information. Knowledge of the overall shape of these graphs, end behavior, domain and range, x and y intercepts, number of local extrema (if applicable), and vertical/horizontal asymptotes all require an analysis of quantitative arguments. For example, recognizing the y-intercept as the initial value of an exponential function will aid the student connecting the function values to its graphical representation. Also finding the value of the horizontal asymptote of exponential decay functions and visualizing the function approach the asymptote will aid the student to understand the range of a function, and a reasonable minimum value of the decay. Further, finding the domain of any function is the keystone of analyzing quantitative arguments. The student must be aware of what x values can be used in the function and what values need to be excluded and why. Application of quantitative models will be investigated with application problems in biology (exponential growth of bacteria), chemistry (half-life of elements), physics (motion of a projectile) and business (polynomial representations of cost, revenue or profit on restricted domains).

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

Link to Institution's General Education Assessment Plan <https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 14 2019



Upload Assessment

Completed - Mar 14 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Sample Assessment for NM HED Course Certification Form

Filename: Sample\_Assessment\_for\_NM\_HED\_Course\_C\_3oXNM3S.docx Size: 21.2 kB



### Upload Rubric

Completed - Mar 14 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## CriticalThinkingRubricupdated

Filename: CriticalThinkingRubricupdated.pdf Size: 180.6 kB

## Application: 0000000103

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



### Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
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### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Arts & Humanities

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	ENG
Number	111
Title	Composition & Research
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	1120
Name	Composition II

**A. Content Area and Essential Skills**



## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Analyze the rhetorical situation for purpose, main ideas, support, audience, and organizational strategies in a variety of genres. 2. Employ writing processes such as planning, organizing, composing, and revising. 3. Use a variety of research methods to gather appropriate, credible information. 4. Evaluate sources, claims, and evidence for their relevance, credibility, and purpose. 5. Quote, paraphrase, and summarize sources ethically, citing and documenting them appropriately. 6. Integrate information from sources to effectively support claims as well as other purposes (to provide background information, evidence/examples, illustrate an alternative view, etc.). 7. Use an appropriate voice (including syntax and word choice).

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students read, evaluate and analyze a variety of texts across a variety of genres, evaluating various rhetorical situations in terms of context and content as they identify and locate relevant source material for a series of assigned research papers. Students learn various strategies for understanding and evaluating written texts, and also learn how to combine these strategies into ways of gathering information for their own writing. Starting with an orientation from the university librarian, followed by reading assignments and in-class lectures and discussions about effective research and note-taking techniques, students learn and apply various strategies for effective library and online research and note-taking, while also interpreting and evaluating the messages of the texts they encounter in their research. There is a focus on active reading and re-reading of texts, using best academic practices of looking up unknown words, asking questions and carrying on a dialogue with each text, and through using underlining, highlighting and note-taking. Students are encouraged to use a research journal/notebook (or maintain a dedicated research document on their laptop) to thoroughly track their research and related notes, particularly to record relevant citation information and to protect against unintentional plagiarism by avoiding confusion between source material and student ideas or notes.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students develop and apply essential critical thinking skills while identifying and gathering relevant information to analyze in a series of assigned research papers. In writing assignments for this class, students are invited -- in fact, required -- to evaluate and interpret information from a variety of texts, including both primary and secondary sources. Starting with a working thesis on a self-chosen topic, students develop an outline and then write (and revise) drafts of research-based essays using well-chosen textual evidence from their sources; this evidence they introduce and interpret, following the three-fold approach of introduction, quotation, interpretation which is modeled in class lectures and reading assignments. Through practicing and mastering this skill set, students learn to participate in the general interpretive community and academic discourse in a responsible, thoughtful way, while also developing and sharpening their critical thinking skills. Students also model the skills related to critical thinking by in-class discussions, whether in small group conferences or in the class as a whole. In general, the class is structured so that students feel welcome, if not compelled, to speak up and join the conversation, and to actively ask (and answer) questions during class. Finally, students learn how to frame a question and a working thesis for a research project, how to evaluate sources in terms of credibility and relevance, and how to analyze and interpret textual material in order to confirm or revise that working thesis, while proceeding through the stages of a multi-draft research paper.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Students learn the responsible use of digital information and the application of effective research techniques using both digital and analog resources; not only is careful and credible research the foundation for any academic writing, but practicing this kind of research helps develop critical thinking skills. The semester begins with an orientation from the university librarian on the resources available at NTU (both digital and analog), how to access those resources via the university library web site, and how to get started using them, from basic issues like passwords to tips on keyword searching and effective note-taking. This is followed by in-class modeling and discussion of both online and in-library research techniques, and reading assignments and in-class discussions about how to evaluate the credibility of sources (with a focus on distinguishing primary, secondary and tertiary sources) and the risks of both intentional and unintentional plagiarism when writing a research paper. Students then apply these techniques as they identify and locate source material for a series of assigned research papers; in this process they evaluate sources for their credibility and relevance, and incorporate information from their research in their written work, with an emphasis on complete and accurate attribution of sources following MLA guidelines for in-text citations and citation lists.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Application: 0000000091

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



Application Form

Completed - Mar 18 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Cory Roberts
Title	Full Time Instructor
Phone	5757694910
Email	cory.roberts@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	BIOL
Number	211
Title	Human Anatomy and Physiology I and Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	n/a
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	BIOL
Number	2210C
Name	Human Anatomy and Physiology I Lecture and Laboratory

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Student Learning Outcomes: (lecture)

1. Describe and apply anatomical terminology.
2. Describe multi cellular organization.
3. Distinguish and describe major tissue types.
4. Describe the structure and function of the integumentary system.
5. Describe the structure and function of the skeletal system.
6. Describe the structure and function of the muscular system.
7. Describe the structure and function of the nervous system.
8. Describe the structure and function of the special senses.
9. Define homeostasis and describe specific examples for the integumentary, skeletal, muscular, and nervous systems.

Student Learning Outcomes: (laboratory)

1. Apply the scientific method correctly.
2. Collect, analyze, and interpret scientific data.
3. Use laboratory equipment, such as a microscope, correctly and safely.
4. Analyze the structure of cells, cell membranes, and cell organelles with respect to their respective physiological roles.
5. Identify the anatomical components of human tissues, organs, and organ systems using prepared microscope slides, models, diagrams, illustrations, or cadaver specimens.
6. Describe the functional characteristics of human tissues, organs, and organ systems using prepared microscope slides, models, diagrams, illustrations, or cadaver specimens.
7. Analyze the physiological processes of the integumentary, skeletal, muscle, and nervous systems.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a



## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

The problem setting that students encounter across the semester is learning and using the scientific method as it applies to human anatomy and physiology. Students will be assessed by their lab results completed before, during, and after experimentation. Evidence acquisition will take place in a laboratory setting as students support concepts of homeostasis by examining critically normal human physiology. Students learn reasoning and conclusion skills through interpretation of lab results and ability to apply scientific knowledge to unknown biological situations. Reasoning and conclusion skills are assessed through class and lab assignments and formal course exams. Critical thinking skills will be assessed through both critical thinking multiple choice and essay questions.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will learn communication of quantitative information throughout the course with discussions of case studies and homeostatic imbalances concerning human anatomy and physiology. Students will learn to represent data during collection and presentation of data in tabular and graphical form during lab experiments. Students will learn to analyze quantitative information by working with sample data sets or data they collected as part of a lab exercise. Application of quantitative models will take place in a laboratory setting. Quantitative reasoning skills will be assessed through lab reports, discussion forums, and formal course exams.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Across the semester, in this course, students will examine human culture in the context of human anatomy and physiology, the impacts of physical, chemical and environmental conditions on human biology and health, including sustainable practice, especially in the medical arena. Ethical reasoning will be addressed in class discussions and applied for research questions in human health. Students will discuss the human species, physiological needs, causes and ecology of human diseases and the implications of humans as drivers of environmental, human health and biological change. Collaboration skills, teamwork and value systems are developed throughout the course as students are required to work with one another to learn the anatomy of the body and use their combined skills towards civic engagement. Personal and social responsibility skills are assessed using discussion forums, quizzes, and formal exams.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 18 2019



**Upload Assessment**

**Completed** - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**Sample assessment BIOL 211**

**Filename:** Sample\_assessment\_BIOL\_211.pdf **Size:** 1.1 MB



**Upload Rubric**

**Completed** - Mar 18 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**CourseSyllabusBIOL211-104NewtonSP19**

**Filename:** CourseSyllabusBIOL211-104NewtonSP19.docx **Size:** 30.3 kB

**Application: 0000000049**

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



**Application Form**

**Completed** - Mar 18 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joel Keranen
Title	Professor of Physics
Phone	5754922820
Email	jkeranen@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PH
Number	124
Title	General Physics II
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	PHYS
Number	1240C
Name	Algebra-based Physics II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Be able to state Coulomb's Law and Gauss's laws and apply them.
2. Apply the concepts of electric charge, electric field and electric potential to solve problems.
3. Analyze simple DC and AC circuits.
4. Apply the Lorentz force to solve problems.
5. Apply Faraday's law of induction (and Lenz's law) to solve problems.
6. Apply ray optics to practical lens systems such as microscopes and corrective lenses.
7. Apply the wave nature of light to the phenomena of reflection, refraction, and diffraction.
8. Describe the fundamental properties of periodic motion.
9. Explain and apply the basic concepts of sound and wave motion.
10. Explain the scientific method.
11. Test ideas using modern laboratory equipment.
12. Estimate experimental uncertainties using statistical methods.
13. Use computers to analyze and report laboratory results.
14. Draw appropriate conclusions from quantitative scientific observations.
15. Accurately and clearly communicate the results of scientific experiments.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

To develop critical thinking skills in this course, students will

1. Complete laboratory reports in the lab portion of the course wherein they will develop the ability to express quantitative information symbolically, graphically, and in written language.

(Communication/Representation of Quantitative Information)

2. Complete a peer graded assessment of a laboratory report to interpret, analyze, and critique information by others. (Analysis of Quantitative Arguments)

3. Participate in a cumulative lab practical as a part of the final exam for the laboratory. The practical consists of presenting student with a set of devices and instruments, asking students to determine physical principles that can be tested with the device and analyzing the results of these tests.

(Application of Quantitative Models)

4. Participate in the assessment: Conceptual Survey of Electricity and Magnetism. Students will solve conceptual problems by use of physics concepts of electricity and magnetism. (Problem Setting and Reasoning/Conclusion)

5. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition and Evidence Evaluation)



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning skills in this course, students will

1. Use the knowledge taught in lecture and laboratory to address and solve specific problems in physics.

(Problem Setting and Evidence Acquisition)

2. Students will evaluate certain problems, within lecture and laboratory, for their physical validity to learn to develop conclusions, solutions, and outcomes that reflect an informed, well reasoned evaluation.

(Representation of Quantitative Information and Reasoning/Conclusion)

3. Perform laboratory experiments of physical principles and place the collected evidence in tabular form and graphical form. The data will be analyzed, and the students will answer questions about the analyzed data in laboratory reports. (Evidence Acquisition, Evidence Evaluation, Representation of Quantitative Information, and Analysis of Quantitative Arguments)

4. Participate in an assessment, “Conceptual Survey of Electricity and Magnetism”. This test consists of solving physics problems in electricity and magnetism, to test students on basic physical principles in electricity and magnetism. (Problem Setting, Evidence Acquisition, Reasoning/Conclusion)

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To develop personal and social responsibility skills in this course, students will

1. Write a group laboratory report on an experiment in which they work together as a team. Student interaction within their group will be integral in this experiment. (Collaboration Skills and Teamwork)
2. Visit an electrical generating station and write notes on all possible physics applications on the processes in the station. The notes will be analyzed and discussed. (Civic Discourse, Civic Knowledge, Evidence Acquisition, and Reasoning/Conclusion)
3. Read an article about unethical behavior in physics to evaluate the evidence and data for credibility. Students will write a report about this article in the framework of concepts learned in lecture and laboratory. Specific examples of error and fraud are to be addressed. This assignment will assess the ability of the students to recognize and mitigate unethical behavior in their own work and others. Ethical reasoning will be central to this assignment. (Ethical Reasoning and Evidence Evaluation)
4. Students will write an essay on the importance of the electrical infrastructure on civilization and society. (Sustainability and the Natural and Human Worlds)

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## CSEM

Filename: CSEM.pdf Size: 343.5 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000085

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility

5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	575-769-4753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	ENG
Number	211
Title	Introduction to Literature
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	1410
Name	Introduction to Literature

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Read a selection of fictional, poetic or dramatic work.
2. Identify literary devices and conventions in selected pieces of fiction, poetry, drama, and film.
3. Use critical approaches and engage in discussions to analyze fiction, poetry, drama, and film.
4. Define the strengths, limitations, and distinctions of fiction, poetry, drama, and film.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Analyze selected contemporary texts, social contexts of origin and reception, and the lives of authors, and examine the connections and intersections.
2. Prepare and deliver examples of poems designed to imitate literary poetry.
3. Engage in respectful and exploratory dialogue with peers.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Across the semester, students will be introduced to a variety of literary works of differing form and diverse authorship. During class discussions, research, and essay composition, students will learn to analyze, reflect, compare, and contextualize literary forms and devices associated with each form. They will also learn about authors' lives and the influence of politics, culture, religion, history, gender, race, and geography upon works. Students will analyze works of similar nature but produced in different eras, and learn to contrast and contextualize those works. Students will encounter human commonalities as expressed in literary works and be asked to draw connections to their own lives and the current cultural, material and psychological circumstances of those lives. Students will be required to participate in civil discourse about their readings, expressing themselves with kindness and respect for one another and readers, through class discussions, writing, and research.

***Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Through readings, reflection, discussions, and creative engagement, students will explore individual and social behavior and discourse across the semester. Students will examine literature as personal and social discourse and the causes and effects of said discourse in social and political settings. Students will engage in respectful observation, analysis, and discussion of literary and critical works. Students will explore the personal and social possibilities presented by literary works and reflect upon those, applying ideas and perspectives on their own lives, enabling them to understand new options and consider changes to their own personal and social behavior. Through readings, discussions, and writing assignments, students will engage with the human behavior and experience of the many different eras and places of those human literary endeavors. Such engagement will empower them to analyze the way cultural discourse and social forces have shaped human behavior over time.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Across the semester, students will be conducting research that requires them to access the College's library and data sources. Assignments will require students to conduct research into literary criticism and document that research.

Students will also be introduced to using web resources such as videos to support their research and interpretation of literary works. In their research, students will also be encouraged to consider alternative, primary, and popular sources of information related to literary works. Students will also learn to utilize online tutorial support such as Purdue OWL and Brainfuse.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**ENG 211-ENGL 1410 Syllabus and Rubric**

Filename: ENG\_211-ENGL\_1410\_Syllabus\_and\_Rubric.pdf Size: 244.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.



## Application: 0000000164

Janett Johnson - janett.johnson@clovis.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

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7. Other: 3 Essential Skills chosen by the institution

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### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	MUS
Number	107
Title	Piano I
Number of credits	2

**Was this course previously part of the New Mexico General Education curriculum?**

No

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	MUSC
Number	1220
Name	Fundamentals of Piano for Non-Majors

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Develop technical skills in both hands to allow for ease in movement around the keyboard.
2. Develop growth in reading rhythmic melodic and harmonic music.
3. Demonstrate improved performance ability.
4. Demonstrate knowledge of all major and minor scales, triads, chord progressions, and four-part harmony.
5. Explain the importance of proper keyboarding practices.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

**C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Throughout this semester, students will communicate with one another about a variety of musical works and composers being introduced and studied. Students will communicate through writing a paper comparing and contrasting composers and their musical works considering such factors as the musical period they lived in, the purpose of their music, and outside influences. Students will describe their experiences at a concert they are required to attend by using musical terms learned in the class. They will also express their own personal opinions and share their knowledge of accepted concert etiquette. Students will give an oral presentation about a composer of their choice and use reliable and credible sources, and discuss with each other some pieces of the music those composers created.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will analyze and critically interpret significant musical works by placing emphasis on musical terminology covered in the text and musical structure during the semester. A variety of musical form examples will be examined through listening and visual means so students can analyze pieces on their own and properly identify the musical structure of a piece. Students will also learn to discern between different tonalities, chords, and sequences to be able to recognize those musical forms in each piece of music. Throughout their piano practice, students will recognize and evaluate the dynamics and tonalities of a piece and learn to play with both hands. They will learn to connect a piece of music in a book to the keys on the piano and learn to read notes and their values. During mid-term and their Final, students will perform pieces of music of their choice. The use of the text, listening examples, YouTube clips, and study guides, will create an incremental sequence of student comprehension of the course objectives and competencies. Students will analyze how modern music evolved through the introduction of new instruments, notation, and the ideas of prominent composers.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will recognize and articulate the role music plays in our society as a whole, its importance in different ethnic cultures and in their own lives in regard to religious, political and social contexts throughout the semester. Students will discuss how different aspects of a composer's life may have influenced the type of music they wrote, make informed opinions about what audience the composer was writing for and how this might have also played a role in the music they wrote as well as identify other outside influences that impacted their music. They must analyze how political, economic, social, and interpersonal influences may have shaped a composer's world view and how early influences in their own lives impacted the types of music they enjoy or play. Students will share their own experiences with music, the concerts they visited, and will reflect on their experience during their own performances.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**MUS 107-MUSC 1220 Rubric**

**Filename:** MUS\_107-MUSC\_1220\_Rubric.pdf **Size:** 285.0 kB



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### MUS 107-MUSC 1220-Syllabus

Filename: MUS\_107-MUSC\_1220-Syllabus.pdf Size: 185.7 kB

## Application: 0000000156

David Torres - davytorres@nnmc.edu

NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	David Torres
Title	Chair of Mathematics and Physical Science
Phone	5057472174
Email	davytorres@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Mathematics and Physical Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

### Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information



Prefix	ASTR
Number	110
Title	Introduction to Astronomy
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ASTR
Number	1115
Name	Introduction to Astronomy

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will discuss the night sky as seen from Earth, including coordinate systems, the apparent daily and yearly motions of the sun, Moon, and stars, and their resulting astronomical phenomena.
2. Students will list and apply the steps of the scientific method.
3. Students will describe the scale of the Solar System, Galaxy, and the Universe.
4. Students will explain telescope design and how telescopes and spectra are used to extract information about Astronomical objects.
5. Students will describe the formation scenarios and properties of solar system objects.
6. Students will describe gravity, electromagnetism, and other physical processes that determine the appearance of the universe and its constituents.
7. Students will describe methods by which planets are discovered around other stars and current results.
8. Students will describe the structure, energy generation, and activity of the sun.
9. Students will compare our sun to other stars and outline the evolution of stars of different masses and its end products, including black holes.
10. Students will describe the structure of the Milky Way and other galaxies and galaxy clusters.
11. Students will describe the origin, evolution, and expansion of the universe based on the Big Bang Theory and recent Astronomical observations.
12. Students will describe conditions for life, its origins, and possible locations in the universe.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

No additional institution-specific student learning outcomes will be used.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

All the student learning outcomes will be discussed in the course. Particular emphasis will be placed on the scientific method on how it has been adopted in science to sort fact from fiction. In this narrative, we will discuss Student Learning Outcome 1. (Students will discuss the night sky as seen from Earth, including coordinate systems, the apparent daily and yearly motions of the sun, Moon, and stars, and their resulting astronomical phenomena.) We believe the principles embedded in Student Learning Outcome 1 can be taught by learning the motion of other planets.

Students will be asked to do a project on one of the planets of the solar system. Students will describe the following properties: time to revolve around the sun, distance from sun (perihelion and aphelion), length of a day, tilt of the axis, internal composition of the planet, mass of the planet, density of the planet, atmosphere, magnetic field, moons, unique features (rings), discovery date (for more distant planets), and any spacecraft missions to the planets. All these features will require evidence acquisition and establish the problem setting. Students will also be asked to describe general relationships which require evidence evaluation and reasoning: how the tilt of the axis affects the seasons, how a magnetic field is generated and how it can shield the planet from solar radiation, and how the distance from the sun affects the force of gravitation and the length of the planet's year.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

All the student learning outcomes will be discussed in the course. For example, students will learn how the masses of the planets compare to each other, and how the average distances from the sun compare to each other (Student Learning Outcome 3). Students will need to learn the proper dimensions to use to describe mass, density, magnetic field, and distance from sun. They will also be required to learn elements in the periodic table to describe the composition of the planet and its atmosphere. Students will have to explain how magnetic fields are generated, how the tilt of the planet affects any seasonal variation during the year, and how the distance from the sun affects the length of the year and gravitational attraction. Students can also research the eccentricity of the planet's orbit and compute the gravitational force using Newton's Law of Gravitation and the average distance from the sun (application of quantitative models). Researching these planetary facts requires students to communicate quantitative information and analyze quantitative arguments.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will be asked to support or not support funds spent on astrophysics. Students who support the research can point to satellites which have changed our society. Avoiding asteroids in the future may depend on our understanding of our solar system. Research developed by the space shuttle or international space shuttle has many different applications. Students who do not support the research will need to explain how they would spend the research dollars on other fundamental research that they believe may have more benefits for society. For example, many research dollars are spent on studying and discovering new subatomic particles (Higgs boson), and quantum mechanics which may not have immediate benefits to society but could help lead to new insights in quantum computing. Fusion research has not produced an engineering design that could produce a self-sustaining fusion reaction which can be harnessed for energy production. However, if a design was to be found, fusion could produce inexpensive energy without generating greenhouse gases and the radioactive wastes generated by fission.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/assessment-2/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 20 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### Assessment for ASTR 115

Filename: Assessment\_for\_ASTR\_115.docx Size: 64.6 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000068**

Joaquin Gallegos - joaquin.gallegos@nnmc.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

#### Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joaquin Gallegos
Title	Assistant Professor of Environmental Science
Phone	(505) 747-5480
Email	joaquin.gallegos@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Biology, Chemistry, and Environmental Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

### Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	ENVS
Number	1110
Title	Environmental Science I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	ENVS
Number	1110L
Title (if applicable)	Environmental Science I Laboratory

## New Mexico Common Course Information

Prefix	ENVS
Number	1110
Name	Environmental Science I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will learn to critically analyze cause-and-effect relationships in the environment
2. Students will integrate and synthesize knowledge and draw appropriate conclusions based on the scientific method

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Not applicable.



## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Within this interdisciplinary course of Environmental Science, students are instructed in critical thinking by means of tackling many of the current complex problems within our world related to the environment. Students are asked to critically think about the problems that face the environment and their immediate surroundings with written assignments, in which they are asked to define the problems that face our environment. Because of the interconnectivity of environmental problems, defining a problem is a key skill. Emphasis on system thinking assist with defining a problem for this written assignment. Placing a context on the problem is important so they understand how the problem arose. Because many environmental problems are complex and multifaceted, students will gather evidence to support their ideas on the context of a problem in a report on global environmental problems. At the beginning of the course, evidence can be everything from experiential and or anecdotal for small one-page homework assignments and through the duration of the course, students transition to citing credible sources of evidence culminating in formal reports. The process of gathering data facilitates student/instructor interactions to assist students to understand what is and is not credible evidence. From this process students can now draw conclusions to understanding source of environmental problems for their formal reports. Using this model numerous times within the course, on different assignments, students develop skills that allow them to question and understand.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students taking environmental science courses will be exposed to a variety of articles. Students will have to summarize these articles into concise summarizations of quantitative data. They will be required to interpret visual representations of data and/or equations. Students will in turn take these data to be used for guided interpretation that will require summarization of results, implications, and arguments. Guided interpretation will include a brief discussion on statistics, the power of statistics, and its potential abuse. Students will be assessed by their critique of the quantitative arguments presented in the articles, where some articles will have valid and other invalid arguments. This will demonstrate understanding of quantitative information, quantitative arguments, and quantitative reasoning. The end result of interpretation will be a submitted assignment/s where students apply their new knowledge and determine if, when, and which quantitative model will be appropriate for use. Within the course students will be required to interpret demographic graphs on tests and other assignments. Interpretation will require students to understand how these graphs are used by demographers to identify growing/decreasing populations. In exams students will also be required to apply reproduction models of R and K reproduction strategies to animals, related to carrying capacity and long-term population sustainability.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Environmental Science, with its global view, facilitates discussion on how different cultures interact with their environment. Students can use reference from their culture for in class discussions, while exploring how different cultures adapt to their environment. Students will be assessed in exams focusing on how cultures across the globe in arid areas have adapted to their environments like those of New Mexico. Students are asked to respect other cultures and understand the how and why different cultures evolved within different environments and will be assessed on this in homework assignments. Students are assessed on the interconnectivity of environmental problems and how social, political, economic, demographic, and other factors influence environmental issues/problems in assignments and formal reports. This allows students to understand their responsibility on the local and global level and how impacts can be made on multiple levels which will be assessed during group work assignments. Part of this process supports ethical reasoning to be based on multiple perspectives and cultures. Group work allows students within the course to share perspectives, work through competing/conflicting perspectives, and can result in improved products. The overall goal is to facilitate student reflection on how their life, lifestyle, and choices impact the sustainability and future of their community, local and global. These interactions can be used in subsequent reports in the course that address global environmental issues, with an emphasis on evidence-based solutions for sustainability. Students will engage in open discussion where controversial environmental topics such as trophy hunting, confined animal feeding operations, wilderness areas, etc. will be discussed to promote civil public discourse where students will be assessed on their ability to present opposing viewpoints in respectful manner. Students will be assessed on the ability to articulate their perspective and present evidence to support their stance.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/curricular-assessment/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 14 2019



**Upload Assessment**

**Completed** - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**ES 112 test 3**

**Filename:** ES\_112\_test\_3.docx **Size:** 185.9 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000143**

Janett Johnson - janett.johnson@clovis.edu  
NM General Education Curriculum



**Application Form**

**Completed** - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	ENG
Number	233
Title	Technical and Professional Writing I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2210
Name	Professional and Technical Communication

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Choose professional communication appropriate for audiences and situations. 2. Write in different genres of professional communication. 3. Identify the purpose of a work-related communication and assess the audiences' informational needs and organizational constraints. 4. Employ appropriate design/visuals to support and enhance various texts. 5. Demonstrate effective collaboration and presentation skills. 6. Integrate research and information from credible sources into professional communication.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

The 2210 class is an introduction to Technical Writing and Communication on the Sophomore level, thus students are still developing critical thinking and writing skills as they work through the course. Across the semester, students learn about and write several types of technical documents to include research reports, instructions, technical descriptions, letters, and proposals. Inherent in creating, understanding, and evaluating types of technical communication are specific structural formats, organization and language conventions, and design issues that must be applied when creating or reading a technical document. Memos, menus, emails, letters, directories, reports, and video chats are some of the most well known examples present in the world around us. Students learn to identify the features of these documents and practice structuring them: Format, purpose, audience, and design shift based on the document at hand, thus ethos, tone, language, and principles of design in consequence shift based on expectations and conventions of the genre. Students learn that choosing the appropriate communication channel – email, video chat, letter, conference call, PowerPoint, SM, multimodal rhetorical approach, etc. - lends itself to appropriate and successful communication, and students evaluate messages as based on these technical approaches. Rhetorical strategies of technical communication can be informative, descriptive, or persuasive depending on the purpose and type of communication. Medium, or the way in which a message is relayed, is also considered, for example, using a computer for a newsletter, a phone for voice call, or video for visual communication, etc. Learning is assessed by evaluating students' technical writing based on key features of a given type of document based on articulated rubrics; testing on key concepts as written in the text book by means of exams; and on content offered in written discussions (for the online class) as based on content and understanding.

Institution-specific Student Learning Outcomes.



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Across the semester, students engage in critical thinking while evaluating and writing technical documents. Students engage in many critical thinking activities, such as by working through ethical problems; evaluating graphics and charts for usability, reliability, and honest representation of data; and discerning primary versus secondary sources. By the nature of composing technical documents, students critically analyze and consider audiences and their expectations for the communication; they make language, structural, design, and grammar decisions; discover what the purpose and effect might be; and make recommendations based on the facts of the document. Students must select sources based on credibility and use, and think through complex situations in areas such as design and format. Issues of consistency, balance, and usability are also at issue. Learning is assessed by evaluating answers (eg. students' reasoning) on scenario-based problems and questions; testing on key concepts as written in the text book; and on content, clarity, and design as presented in students' written technical documents.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Technical writing projects require research, whether one is writing an internal travel report, a published technical description, or the more obvious research report. Technical writers must be inquisitive in order to present the needed information in a specific technical writing situation. Students conduct library (Database, closed source) and internet (WWW, open source) research. They learn to discern what information is important to which type of communication. For the research report, students practice research tasks such as narrowing a topic, forming a research question or hypothesis, choosing a methodology, collecting evidence, evaluating types of sources for credibility and usability, triangulating sources, integrating sources, and documenting sources using APA format. Students are also asked to conduct research for several types of technical communication, such as the proposal, technical description, instruction manual, web site, and companies' codes of ethics. Students become information managers who evaluate, prioritize, interpret, store, and share collected information in particular types of documents and formats for specific purposes for and to particular audiences. Information and digital literacy are fundamental skills that technical writers develop and practice. Learning is assessed by evaluating students' technical writing based on key features of a given type of document; testing on key concepts as written in the text book; and on content offered in written discussions (for the online class).

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## ENG 233-ENGL 2210 Rubric

Filename: ENG\_233-ENGL\_2210\_Rubric.pdf Size: 79.0 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## ENG 233-ENGL 2210 Online Syllabus

Filename: ENG\_233-ENGL\_2210\_Online\_Syllabus.pdf Size: 787.4 kB

## Application: 0000000041

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



### Application Form

In Progress - Last edited: Mar 12 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Kennedy Alila
Title	Professor of Chemistry
Phone	575-492-2803
Email	kalila@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	CH
Number	114/L
Title	Current Concepts of Chemistry
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	CHEM
Number	1120C
Name	Introduction to Chemistry Lecture and Laboratory (non majors)

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Listed below are a set of student learning outcomes tied to the course lecture and laboratory for CHEM 1120C, as a combined credit course. They help assess the student's understanding of the learning processes and the necessary course-skill acquisition during the learning process.

CHEM 1120C: Lecture Student Learning Outcomes:

1. Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements
2. Identify elements from their name or symbol, use the periodic table to describe reactivity patterns of elements and to predict compound formation.
3. Describe the basic structure of an atom using subatomic particles, and apply these concepts to nuclear reactions.
4. Describe ion formation and the difference between covalent and ionic compounds. Name and write formulas for ionic and simple molecular compounds.
5. Write and balance chemical reactions. Use balanced reactions in stoichiometric calculations.
6. Describe the differences between the solid, liquid and gas phases. Use the gas laws in calculations, and apply these laws to everyday situations.
7. Explain different types of energy, and how energy is released or absorbed in a reaction
8. Describe acid and base behavior.
9. Explain the intermolecular attractive forces that determine physical properties; apply this knowledge to qualitatively evaluate these forces and predict the physical properties that result.
10. Explain the intermolecular attractive forces that determine physical properties; apply this knowledge to qualitatively evaluate these forces and predict the physical properties that result

## CHEM 1120C: Laboratory Student Learning Outcomes

1. Practice concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory-related calculations to include, but not be limited to determining the number of significant figures in numerical value, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Record quantitatively measured values to the correct number of significant figures and assign the correct units.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Draw appropriate conclusions based on data and analyses.
7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
8. Determine chemical formulas and classify different types of reactions.
9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

As an introductory course to various concepts to a diverse group of individuals, students will be introduced to learning and applying basic principles of chemistry to scientific inquiries using scientific methods. Instructions/discussions will focus on helping students learn the skills of approaching scientific phenomena by looking at things critically and coming out with a plan that leads to a conclusion. Laboratory will involve introduction to basic laboratory techniques ranging from practice of safety to actual data generation and management.

Students will perform laboratory tasks that lead to qualitative or quantitative observations. They will learn how

to use their sensory experiences and instrumentations to collect data. They will learn on various forms of data

collections (charts, graphs, tables etc.)

Students will then learn how to analyze and interpret their own data. They will also learn to identify common errors

and make assumptions that still support their argument. Students will then reflect on outcomes and develop relevant conclusions based on their data

Assessment of these outcomes will be through the course textbook online homework and in-class proctored tests.

Students will be asked to Analyze, demonstrate, apply, determine, draw, manipulate, or show conceptual relevance

through written tests. The laboratory assessment will be through actual experimental design and performance. They will investigate, observe, record, interpret, or, analyze their findings in oral or written form.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will learn to display good communication, analysis, and application analysis of quantitative information in oral or written form. They will be expected to use different systems of measurement skills to perform quantitative applications. Computational skills will be required to help students learn translations of information into tables, charts, or graphs and demonstrate any quantitative argument whether from a theoretical or experimental perspective. Students' arguments will include determination of number notations, significant numerical values, use of dimensional analyses, and manipulation of mathematical formulae to solve quantitative problems.

Students will learn to master basic laboratory techniques of weighing samples, volume, and temperature readings and managements of these data.

Assessments of the learning process through homework and written tests will focus on a wide range of topics on atomic and molecular structures, acids and bases, masses and solutions among other areas. Laboratory component will focus on safety, demonstration of computational of observation and mathematical skills. Lab reports will be expected to have good format of quantitative argument and representation.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The course will require that students learn to connect to personal or social-ethical choices or actions. They will learn to work and contribute to small groups and still accept diverging views. They will learn techniques that help them look at issues by comparing and contrasting solutions across social and cultural relationships in their reports.

They will then learn to explain the impact of their decision making in a moderate way using ethical reasoning. During concept reviews and laboratory activities, students will be required to give personal input while working

collaboratively on issue through shared obligations They will present a diverse view on issues, demonstrate ability in civic dialogue on issues local or global.

As non-science majors and students of some health profession, they will be expected to use chemistry as an interdisciplinary science to relate to their actual areas of interest without critical cultural conflicts. Their tests, homework, or debate problems will estimate and discuss the socio-economic impact of chemistry in their lives.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



Upload Assessment

Completed - Mar 12 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## CHEM 1120C Sample Test

Filename: CHEM\_1120C\_Sample\_Test.docx Size: 12.5 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000144

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Katherine Goad
Title	Professor of Biology
Phone	5754922818
Email	kgoad@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	BI
Number	214A
Title	Human Anatomy and Physiology I
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	BI
Number	214AL
Title (if applicable)	Anatomy and Physiology I Lab

## New Mexico Common Course Information

Prefix	BIOL
Number	2210C
Name	Human Anatomy & Physiology I Lecture & Laboratory

## A. Content Area and Essential Skills

### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

#### Lecture Student Learning Outcomes:

1. Describe and apply anatomical terminology.
2. Describe multi cellular organization.
3. Distinguish and describe major tissue types.
4. Describe the structure and function of the integumentary system.
5. Describe the structure and function of the skeletal system.
6. Describe the structure and function of the muscular system.
7. Describe the structure and function of the nervous system.
8. Describe the structure and function of the special senses.
9. Define homeostasis and describe specific examples for the integumentary, skeletal, muscular, and nervous systems

#### Laboratory Student Learning Outcomes:

1. Apply the scientific method correctly.
2. Collect, analyze, and interpret scientific data.
3. Use laboratory equipment, such as a microscope, correctly and safely.
4. Analyze the structure of cells, cell membranes, and cell organelles with respect to their respective physiological roles.
5. Identify the anatomical components of human tissues, organs, and organ systems using prepared microscope slides, models, diagrams, illustrations, or cadaver specimens.
6. Describe the functional characteristics of human tissues, organs, and organ systems using prepared microscope slides, models, diagrams, illustrations, or cadaver specimens.
7. Analyze the physiological processes of the integumentary, skeletal, muscle, and nervous systems.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The concept of scientific inquiry is reinforced throughout the semester within both the lecture and laboratory component of the course. This strengthens students' ability to apply current knowledge to resolve problems and to critically think during problem-solving inquiry. Evaluation of this essential skill is via performance on laboratory activities. Additionally, critical thinking type questions are embedded within lecture exams.

Examples of laboratory activities that require students to apply current knowledge include the following:

- Identification of organs and/or structures using different types of medical imaging (e.g. computed tomography, radiography, or magnetic resonance) based on location (e.g. plane, orientation, and section-type)
- Recognition of the body system affected by disease based on signs and symptoms
- Identification of tissues and their subtypes based on cellular morphology and/or its description of function
- Articulation of a skeleton in anatomical position based on bone markings
- Prediction of muscle movement based on location, origin and insertion, and direction of fascicles

Examples of lecture topics that provide opportunities to promote problem-solving inquiry include the following:

- Prediction of feedback (e.g. positive or negative) required to maintain homeostasis based on type of imbalance.
- Use of skin color to predict diagnosis (e.g. cyanosis, jaundice, erythema, pallor, etc)
- Classification of common fractures based on radiography (e.g. Colles', Potts, greenstick, etc.)
- Prediction of movement based on type of articulation
- Classification of body's response (e.g. somatic or autonomic) based on type of effectors, neurotransmitters, and number of motor neurons.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

The concept that students need to be able to communicate conclusions drawn from interpretation of quantitative data and to relevantly apply this information to real world is primarily stressed in the both the lecture and laboratory component. Assessment of the students' skill level is by performance on lecture exams and lab reports. Examples of laboratory activities used to strengthen students' quantitative analysis skills include the following:

- Lab 4 Mitosis Assignment: Students identify the different phases of cells undergoing somatic cellular division, calculate the percentage of cells per stage, and conclude whether results support their hypothesis
- Lab 7 Activity: Students quantify the amount of sweat glands per body area (e.g. forehead, forearm, leg) in numbers per cm<sup>2</sup>
- Lab 7 Application: Students identify the location of skin (thin or thick) based on number of layers and presence of accessory structures
- Lab 10 Activity: Students estimate their height based on length of radius and humerus using the appropriate formulas (e.g. male versus female)

Throughout the semester, classroom discussions include analysis of charts, graphs, and diagrams. Examples include the following:

- Pie chart that represents the major chemical elements in the body
- Graphs that represent how temperature, pH, and substrate concentrations effect the rate of enzymatic reactions
- Diagrams/charts that correlate the different types of articulations with range of motion based on structure and function
- Myograms that represent twitch, wave summation, and tetanus as it relates to membrane potential
- Graphs of graded and action potentials that represent change in membrane potential

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The concept that students need to recognize personal and social responsibilities within our diverse world is particularly important in this course as many of the students are seeking a profession within a healthcare field. The lecture portion of the course provides opportunities to discuss cultural awareness topics such as:

- Use of genomics in the prediction of hypertension, obesity, diabetes, and cancer
- Effects of aging on body systems (e.g. integumentary, skeletal, and muscle)
- Impact of diet on health and disease (e.g. intake of proteins, carbohydrates, lipids, antioxidants, vitamins, etc.)
- Use of stem cells (e.g. in research, treatment of disease, etc.)

Additionally, the laboratory component provides students opportunity to hone their interpersonal communication skills, since they are required to work in teams for some activities. This allows students to work in a more diverse environment and also stresses the value of collaboration and peer learning.

Examples of exercises that require group effort are the following:

- Lab 1 Activities: Identification of body areas using anatomical terms and application of directional terms to locate body structures
- Labs 9 & 10 Activities: Identification of bones and their markings from a disarticulated skeleton
- Lab 14 Activity: Clay modelling of various muscles and identification of their actions based on origin and insertion

Evaluation of this essential skill is via performance based in both the laboratory (e.g. lab reports and practicals) and lecture component (e.g. exams) of the course.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



**Upload Assessment**

**Completed** - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**Exercise 4 Cell Structure BI214A**

**Filename:** Exercise\_4\_Cell\_Structure\_BI214A.docx **Size:** 2.4 MB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000110**

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 20 2019

## Application Form

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

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### Contact Information

Name	Anip Uppal
Title	Instructor, Political Science
Phone	505-224-4000 Ext. 53006
Email	auppal@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	POLS
Number	2120
Title	International Relations
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	POLS
Number	2120
Name	International Relations

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Explain the interrelationships between countries and people in the world.

2.Demonstrate an awareness of current events in the world.

3.Describe several theories of International Relations

4.Explain and identify theories of power and decision making among states in the world. 5.Describe and evaluate issues that relate to International Politics, and how individuals are affected by them.

6.Describe the role of Intergovernmental Organizations in International Politics.

7.Identify the role war plays in International Politics.

8.Explain how economics is intertwined with International Politics.

9.Demonstrate an understanding of role of international terrorism and its impacts on global diplomacy.

10.Articulate how beliefs, assumptions, and values are influenced by factors such as politics, geography, economics, culture, history, government, and social institutions.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students evaluate political messages and arguments presented in a variety of mediums, such as newspapers, articles, and videos, in order to understand the nuances of each medium and the intended audience(s) and purpose(s). Students also communicate through different mediums in the course, including discussions, oral debates, and written work. These different types of assessments require students to demonstrate versatility by varying their rhetorical strategies and tailoring communication to the specific medium, audience, purpose, and context.

Students utilize strategies for understanding and evaluating messages through readings and assessments. For example, students read contemporary scholarly articles where they are expected to identify main points and apply a socio-cultural lens for contextualizing the author's premise. A class discussion then follows in which students delve on the details of the article to reach conclusions regarding the purpose, rationale, result(s), and future research on the issue/topic. As part of this, students compare/contrast the author's argument with other material to seek counterarguments and rebuttals.

The evaluation and production of arguments is demonstrated both in-class and on formal written assessments. During in-class debates, students articulate how beliefs, assumptions, and values are influenced by factors such as politics, geography, economics, culture, history, government, and social institutions to display their understanding and to highlight their ability to produce arguments. Likewise, they evaluate the claims of their peers and make counter-claims in response. Formal written assessments, like a research paper (attached), also requires students to make claims, integrate information from various sources to support their assertions, and cite using appropriate MLA format.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical thinking skills are incorporated in activities throughout the course. For example, problem-setting is utilized during group work when students identify problems surrounding international politics and then identify a range of perspectives and viewpoints.

In another assessment, a research paper (attached), students engage in evidence acquisition by selecting a topic and developing a broader perspective by gathering information and data. Information is obtained through a variety of sources and students must be aware of issues such as validity of information during this acquisition process, as well as the biases and personal assumptions that underlie sources of information, such as news articles.

During the research process, students employ evidence evaluation strategies to evaluate the credibility of their sources. Such strategies include differentiating relevant from irrelevant information, fact from opinions, and assessing agreement among sources. Moreover, the research process also necessitates that students confront and reconcile their own personal assumptions.

The research paper also requires students to demonstrate their reasoning/conclusion skills by explicitly stating a thesis, supporting it with facts and evidence, and convincingly arguing it with logic. Other assessments in the course, such as in-class debates, require students to articulate their positionality on topics such as war plays in international politics, international terrorism, and power structures. When doing this, students use reasoning to build their arguments and likewise evaluate the arguments of their peers. When evaluating peer arguments, they are encouraged to identify logical fallacies and ways in which their arguments could be strengthened.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students gain intercultural reasoning and intercultural competence by studying globalization and the inter-relationship between culture, economics, and politics. In writing assignments, such as short-essay questions, students demonstrate this reasoning and competence by analyzing how an individual is impacted in the home country by policy and rhetorical shifts in other parts of the world and likewise how shifts in the home country effect foreign individuals and nations. During in-class discussions, students identify and describe a wide-range of social justice issues related to the global political economy and compare and contrast various approaches and perspectives relating to these issues.

Student engage in civic discourse weekly by reading and discussing news articles on current international political and foreign affairs. In discussion groups, students explain diverse positions on values and issues and argue their own positions, while being respectful towards other's perspectives and acknowledging a range of valid viewpoints.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## POLS 2120 Assessment & Rubric (revised)

Filename: POLS\_2120\_Assessment\_\_Rubric\_revised.docx Size: 22.9 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## POLS 2120 Research Paper Grading Rubric

Filename: POLS\_2120\_Research\_Paper\_Grading\_Rubric.docx Size: 12.5 kB

## Application: 0000000031

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 13 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	BIOL
Number	2110
Title	Principles of Biology: Cellular and Molecular Biology
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	BIOL
Number	2010L
Title (if applicable)	Principles of Biology: Cellular and Molecular Biology Laboratory

### New Mexico Common Course Information

Prefix	BIOL
Number	2110
Name	Principles of Biology: Cellular and Molecular Biology

### A. Content Area and Essential Skills

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:

<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply the scientific method to develop and evaluate hypotheses and propose an experiment to test a scientific hypothesis related to cell biology and molecular biology.
2. Describe the distinguishing characteristics of various biological molecules (water, carbohydrates, lipids, proteins, and nucleic acids). (HED Area 3, Competency 3)
3. Compare and contrast the basic features of cells and how prokaryotic cells differ from eukaryotic cells. (HED Area 3, Competency 3)
4. Understand how organisms maintain homeostasis in a dynamic environment.
5. Describe how biological molecules are acquired and how they are subsequently used to meet the metabolic needs of organisms. (HED Area 3, Competency 3)
6. Describe membrane structure and function.
7. Describe and analyze the nature of bioenergetic transformations and metabolism within the cell.
8. Describe the processes of cellular respiration and photosynthesis.
9. Analyze with specific detail the processes of DNA replication, transcription, and translation.
10. Analyze with specific detail the types, mechanisms, and regulation of cellular division.
11. Assess important applications of cell and molecular biology to energy use, medicine, and other day to day processes. (HED Area 3, Competency 1,3,4,5)

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Critical thinking skills are assessed by performing an experiment involving the enzyme called catalase which is located in the peroxisomes of the liver and in many other locations in different organisms. Students, working in pairs, restate their problem in their individual lab reports (problem setting). Half the pairs test for the presence of the catalase in a variety of animal organs such as beef liver, chicken breast and muscle, and plants such as potato, onion and apple. About 12 substances are tested including frozen and fresh liver (evidence acquisition). The other pairs test for the effects of different temperatures on liver catalase activity in fresh liver and the effect of pH on liver catalase activity (evidence acquisition). The rate of catalase activity is measured by observing the rate of bubbling (oxygen production) when the catalase is mixed with its main substrate (hydrogen peroxide). An arbitrary scale of 0-10 is used - zero being no apparent catalase activity while 10 is assigned as the greatest activity observed during the experiment.

The data is collected by each pair and then the class data is compiled. Graphs and tables are used to display the data and the data is evaluated for its reliability and variance. Conclusions are reached regarding the presence of catalase in the various foods and these conclusions are then compared to what the literature suggests about each food (evidence evaluation). Conclusions are also reached regarding the optimal pH and temperature for liver catalase. Again students are asked to evaluate their conclusions in comparison to the published literature regarding liver catalase (reasoning/conclusion).



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning is assessed by performing an experiment involving the counting cells at different stages of mitosis. (See Appendix One). Data collection, in this case the counting of cells, is done by students in pairs. The class results are compiled and represented in the form of a table (communication/representation of quantitative information). The reliability of the data is analyzed by comparing the class data with the results of each pair of students. Those students with a sufficient background in statistics are able to perform variance analysis. (analysis of quantitative arguments). Conclusions are drawn about the length of each stage of the cell cycle by calculating the % of cells in each stage and relating the percentages to the given total length of the cell cycle. Percentages are also displayed in a table (representation). Students are asked to explain why different pairs ended up with very different conclusions from their results compared to the class results. Accuracy is related to the total number of cells counted – sample size (application of quantitative models). Students are expected to discuss whether “outlier” results should be included or omitted from the class data. Data from the experiment is also compared to results found in the literature (the real world), and well-reasoned evaluation of the quality of the data collected by the students is expected.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and social responsibility is assessed by evaluating the quality of individual student presentations on the contribution of a specific famous female scientist. Students are encouraged to find their own scientist, but suggestions such as Rachel Carson, Madame Curie, Rosalind Franklin, Jennifer Doudna and Lynn Margulis are often given.

Five percent of the student's final grade is based on their 15-20 minute oral presentation and another 5% is based on the quality of a handout they must produce for their fellow students. This handout contains bibliographical information and a description of the important contributions of the scientist. Peer-reviewed articles must be cited and two multiple choice questions must be written about the scientist. Some of these questions are used on the final exam. The global significance to the natural and human worlds of the work, relevance to sustainability and/or the role of teamwork and collaborative skills in the pursuit of scientific exploration are addressed. Inevitably, the personal and social challenges that women face when doing science are discussed in each student's presentation (civic discourse).

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 10 2019



Upload Assessment

Completed - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## BIOL 2110 assignment

Filename: BIOL\_2110\_assignment.pdf Size: 58.7 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000070**

Heather Davis - hdavis@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Heather Davis
Title	Professor of Biology
Phone	5754922809
Email	hdavis@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Biology

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	NU
Number	103A
Title	Pathophysiology II
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	BIOL
Number	2520
Name	Pathophysiology II

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

### Student Learning Outcomes

1. Describe the cellular and pathophysiologic basis of diseases of the cardiovascular system.
2. Describe the cellular and pathophysiologic basis of clotting and coagulation diseases.
3. Describe the cellular and pathophysiologic basis of diseases of the gastrointestinal system
4. Describe the cellular and pathophysiologic basis of diseases of the respiratory system.
5. Describe the cellular and pathophysiologic basis of diseases of the urinary tract system.
6. Describe the cellular and pathophysiologic basis of diseases of the endocrine system.
7. Describe the cellular and pathophysiologic basis of diseases of the reproductive system, including sexually transmitted diseases.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The concept of scientific inquiry is reinforced throughout the semester primarily with case studies. This strengthens students' ability to critically think via problem-solving assignments. Case studies are part of every chapter covered and each requires the student to perform problem setting, evidence acquisition, evidence evaluation, and/or reasoning. Students are provided information for a certain situation. The student then has the opportunity to develop their critical thinking skills by identifying clinical manifestations, analyzing abnormal clinical laboratory data, assessing risk factors for different disorders, deciding on a diagnosis and/or developing appropriate disease management strategies. Case studies are done in groups, individually, as entry/exit tickets as students enter/leave class, as homework, and are embedded in each unit exam. As the semester progresses, students will also be required to develop a case study over a particular disease. This case study will be answered and critiqued by two other students in the course as well as evaluated by the instructor.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

The concept that students need to be able to communicate conclusions drawn from interpretation of quantitative data and to relevantly apply this information to the real world is stressed in class discussions, presentations, and case study assignments. During class discussions, charts and graphs are analyzed throughout the learning unit and students' skill level is evaluated by questions related to these charts and graphs on the unit exam. Examples of the topics discussed are electrocardiograms, cardiac dysrhythmias, lung volumes and capacities, normal electrolyte values, pH scale, STI prevalence rates, and normal lab values.

When case studies are completed in groups or individually, students will use tables of clinical laboratory reference values, such as normal serum sodium and potassium concentrations, to evaluate collected data from the case study. The groups will communicate their conclusions and analysis of the patient's data to one another and to the class as a whole.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The concepts of recognizing our individual roles and roles others have in our diverse world to emphasized at two different levels: cooperative learning through group presentations and discussions embedded within the lecture. Students will be place in groups and assignment two diseases from the chapter, e.g. pneumonia and emphysema. The group constructs a Venn Diagram to demonstrate the similarities and differences and present their findings to the class. Groups are also given a topic or question from the chapter to teach to the class. This teaming and flipped classroom approach provides students with the opportunity to work in a more diverse environment that emphasizes collaboration. A rubric is used to assess group presentations.

Additionally throughout the course, classroom discussions include topics such as ethical and cultural considerations when addressing and treating patients, gender differences, and myths or misconceptions about colds related to weather, flu vaccines, renal calculi, menstruation, STIs with the use of condoms, breast cancer, and diabetes mellitus. Reinforcing the need of communication between colleagues, medical personal and patients as well as the general public.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 14 2019



Upload Assessment



The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Acid and Base Problems

Filename: Acid\_and\_Base\_Problems.doc Size: 28.2 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000220

Joaquin Gallegos - joaquin.gallegos@nnmc.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility

5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joaquin Gallegos
Title	Chair of Biology, Chemistry, and Environmental Science
Phone	5057475480
Email	joaquin.gallegos@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Biology, Chemistry, and Environmental Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

### Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	BIOL
Number	1110L
Title	General Biology Lab
Number of credits	1

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	BIOL
Number	1110
Title (if applicable)	General Biology

**New Mexico Common Course Information**

Prefix	BIOL
Number	1110L
Name	General Biology Lab

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Employ critical thinking skills to judge the validity of information from a scientific perspective.
2. Apply the scientific method to formulate questions and develop testable hypotheses.
3. Analyze information/data and draw conclusions.
4. Operate laboratory equipment correctly and safely to collect relevant and quality data.
5. Utilize mathematical techniques to evaluate and solve scientific problems.
6. Recognize biodiversity in different ecological habitats and communities of organisms.
7. Communicate effectively about scientific ideas and topics.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Not applicable.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

This introductory biology lab course presents students with a view of the building blocks of life while studying and understanding the scientific method. Students will be assigned to develop a scientific experiment in the course where they state the problem, allowing student to explore "global research theme", requiring students to research the context surrounding their problem and existing evidence related to stated problem, where students will have to decipher between valid and invalid sources of evidence. Within the lab the students will be assessed on their ability to conduct this experiment. College library resources and journal databases will be used to help students identify sources of evidence. Evidence evaluation will be a guided process, so students can determine appropriate sources of evidence. Students will also be assessed for their critical thinking in other lab exercises related to evolutionary tree, cell organization, and basic genetics where critical thinking is required to fill diagrams and identify flaws within presented materials. Current topics papers related to biology will be the basis for students inquiry of biological concepts and data/evidence within the lab. These papers will be appropriate in level of difficulty for an introduction course lab. In addition, students will be assessed on their ability to examine the logical argument presented within the paper and determine if the conclusion follows the argument in relation to evidence, presented argument, or logical conclusion.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will be asked to take quantitative information to synthesize, interpret, and discuss it. The course lab will evaluate students on very basic understandings of population growth and decay models and the Hardy Weinberg Law in different lab exercises and be asked to solve quantitative formulas using these equations. "Exploratory Analyses" will be presented with the labs which will assess student's ability to interpret visual presentations of data and conceptual models. Similarly, "Inferential Analyses" will also be assessed within labs, presenting data to students with appropriate formulas and determine if students can correctly apply data to formula and derive logical conclusion. In addition, a variety of visual representations of data, such as graphs, charts, trend lines, etc. will be assessed by asking students to derive answers from the data presented in said visual representation. Through the process of the lab course student will be given scientific articles that will allow students to analyze quantitative arguments through lab discussion, pre-lab assignments, and lab reports. Concepts of number of biological variables, repetitions, sample size, ...In this process the instructor can also assess if students can apply quantitative models learned in texts and articles. This process will bridge the gap between the theoretical and the application.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and social responsibility will be addressed in this lab course by the topics of bioethics, climate change, pollution, and consumerism. Intercultural reasoning will be addressed by understanding each student's cultural background and perspectives on science and present students with scientific fact independent of religious, cultural, or historical context related to the lab exercises. Once science is presented without context, it will be reintroduced to facilitate discussion on ethical reasoning, focusing on group work for collaboration to create dialog and collaboration skills and team building. This will promote and assess how to engage in discourse that allows respect for opposing point of view while presenting one's own perspective and their evidence. Students then can develop a conclusion that have implications for local and global impacts. Tied to other assignments within the course, within the lab issues of bioethics will also be addressed with many of the current advancements in genetics, cloning, CRISPR, etc. and the implications for our modern life and how these implications could change our planets sustainability. Additionally, we will discuss how society has historically addressed the ethical nature of scientific advancements and how we are currently addressing these advancements. These topics will be assessed in reports on academic articles which will also address critical thinking.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/curricular-assessment/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



## Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### LabEx18

Filename: LabEx18.pdf Size: 306.4 kB



## Upload Rubric

Completed - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### LabEx18\_Rubric

Filename: LabEx18\_Rubric.pdf Size: 54.8 kB

## Application: 0000000193

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



## Application Form

Completed - Mar 21 2019

## Application Form

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## Essential Skills

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6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulse
Title	Professor of English
Phone	5754922833
Email	dhulse@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	SP
Number	124
Title	Spanish II
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	SPAN
Number	1120
Name	Spanish II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students can communicate on very familiar topics using a variety of words and phrases that they have practiced and memorized .
2. Students can present information about myself and some other very familiar topics using a variety of words, phrases, and memorized expressions.
3. Students can write short messages and notes on familiar topics related to everyday life.
4. Students can often understand words, phrases, and simple sentences related to everyday life.
5. Students can recognize pieces of information and some- times understand the main topic of what is being said .
6. Students can understand familiar words, phrases, and sentences within short and simple texts related to everyday life.
7. Students can sometimes understand the main idea of what they have read.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students examine cross-cultural and cross-linguistic interactions. Students state how communication issues cause problems and how clear communication and cultural knowledge can solve problems through cultural awareness and diplomacy.

Evidence Evaluation:

In this course, students not only learn language skills, but also critical thinking skills. Through critical thinking, students increase their vocabulary and cultural knowledge. In this course, students continue building the four basic skills (listening, speaking, reading and writing) that they began learning and practicing in Spanish I. By the end of the semester, they have developed skills and coping strategies for filling in the gaps of imperfect comprehension. The course covers units five to eight of the Vistas textbook that deal with topics like going on vacations, buying items in a market or a store, describing their daily routine and ordering food in a restaurant.

Reasoning/Conclusion:

Instructors provide instruction in critical thinking related to texts and short videos throughout the course. Students read and comment (orally and in writing) about topics like food, prices and the economy. For example, they debate in an online forum about how communities can be more self-sufficient and the support local farmers markets when studying the chapter about food. The quality of their critical thinking is assessed with a rubric.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: When learning another language and culture, students will increase their awareness of the diversity of cultures beyond the United States and analyze similarities and differences between their own culture and others in relation to perceptions, beliefs, and behavior. The goal of language learning is not only the acquisition of communicative competence in a target language, but also the acquisition and development of intercultural competence. Learning a new language is also seen as a way to engage more effectively in the local and global communities. Students are encouraged to talk to native Spanish speakers in their local community and bring their findings to the class.

Ethical reasoning: At this early stage of language acquisition, students engage in conversations and online discussions about culturally sensitive topics like the impact of globalization on food and fashion, sustainability and fair trade. Since vacations and travel are also topics of this class, students discuss the impact of traveling in local and global engagement. The students intercultural reasoning is evaluated in the context of a written assignment about one of these topics and a rubric is used to assess student learning.

Collaboration skills, teamwork and value systems: Students debate orally or online forums about different perspectives and ways of interpreting messages and situations. Collaboration skills and teamwork are encouraged by working in groups throughout the semester and to make the final oral presentations. The students intercultural reasoning is evaluated in the context of a written assignment about one of the topics covered in class and instructors use a rubric to assess student learning.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Students learn the difference between slang and more proper Spanish expressions. Students are presented with reliable language learning sources, and instructors highlight the difference between Spanish dialects and formality registers.

Digital Literacy: In the context of language learning, digital literacy is fundamental for students to be intelligent consumers of online language tools, and to be able to customize their own language learning process. Technology itself cannot guarantee learning but can enhance it when properly used.

Digital literacy is built-in in this course because the textbook used is a virtual one, part of the students' Vista Supersite account, which also allows students to use the website database and dictionaries.

Students learn to use composition tool to create and submit writing assignments online. Projects that develop the four basic skills (speaking, listening, reading and writing) can be extended to the Internet by using podcasts (listening and speaking) and blog entries or online discussions (reading and writing).

The nature of this course allows students to track due dates, save work, and access all assignments and resources. Instructors assess information and digital literacy in the context of online discussions and short essays or letters. Instructors use a rubric to assess student learning.

Information Structure: In this course students participate in oral assignments and group discussions in class. Some of these projects are later extended to the Internet by using podcasts (to practice listening and speaking skills) and occasionally short blog entries and essays to practice reading and writing.

Instructors assess information and digital literacy in the context of a project that includes using the Internet to create an introductory podcast and use a rubric to assess student learning.

Research as Inquiry: Cultural curiosity and the impulse to learn of new cultures and languages is itself an inquiry. This class is an answer to the natural curiosity about what unites us as humans as well as what makes each culture unique.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 21 2019



### Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## SP 124 Sample Assignment

Filename: SP\_124\_Sample\_Assignment.docx Size: 13.5 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000094

Frank Kimbler - kimbler@nmml.edu

NM General Education Curriculum



### Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on



essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Frank S. Kimbler
Title	Asst. Professor of Earth Science
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### Submitting Institution

Name of HEI	NMMI
Submitting Department	Department of Math and Science

### Chief Academic Officer

Name	BG Douglas Murray
Email	dmurray@nmmt.edu

## Registrar

Name	Chris Wright
Email	Wright@NMMI.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	GEOL
Number	1214
Title	Physical geology
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

Yes

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	(No response)
Number	(No response)
Name	(No response)

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for GEOL 1110. Physical Geology .

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

- Recall, describe or explain geologic vocabulary.
- Identify or explain aspects of the geologic time scale and compare the uses and limitations of relative and absolute dating.
- Recognize or explain the evidence used to support the theory of plate tectonics. Describe or identify how plate tectonics is related to the structure and features of the Earth.
- Describe the formation of, and describe, compare, and classify minerals.
- Identify or describe the three main rock types, how each forms in the context of the rock cycle and what each indicates about its environment of formation.
- Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.
- Describe or discuss the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
- Recognize or describe the geologic processes involved in the formation and concentration of geologic resources.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

To acquire and developed critical thinking skills, students in GEOL1214 lecture and labs engage in assignments that require them to make observations and interpret them using the geologic knowledge and concepts learned in class. the labs require some critical thinking to make observations of fossils, rocks, minerals, topographic and geologic maps to solve geologic problems. An example is the relative dating lab. Students are presented with several diagrams showing layers of rock and they have to place the layers in the proper order that they were formed in using the laws and rules presented in class. The diagrams are progressively more complex and require critical thinking skills in order to interpret the complicated layering sequence. Students measure topographic and geologic maps to determine slope angle, and rock types associated landslides in a given area. This information is used to estimate the probability of catastrophic rock failure.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students in GEOL 1214 demonstrate quantitative reasoning during their weekly labs by using tables and charts (numerical data sets) to evaluate exercises involving the movement of continents, water flow in rivers, well discharge, the calculation of the intensity, depth and location of earthquakes, slope angle and its relation to landslides. The students may relate the strength and frequency of earthquakes to the speed of continental and oceanic crustal movements. This quantitative information is used in written analysis and discussions of global and regional implications, especially to society.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

During labs students work together on assignments honing their communication, collaboration and teamwork skills to solve complex geologic problems. one of our labs brings the students together as team working for a mining exploration company. Their job is to use their combined skills learned in the geology class to locate a valuable ore deposit. They have a budget, they have data to interpret, they must make decisions as a team to find the best location. They have to determine environmental impact on the towns in area. They have to understand how they work together as a team and the decisions they make have an influence on society. Students discuss such things as " How do big mining companies operate in the real world and what is the impact on society?"

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 18 2019



### Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Physical science lab example from AGI 8th edition

Filename: Physical\_science\_lab\_example\_from\_AGI\_\_2lpAnkJ.pdf Size: 1.6 MB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000101

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Marissa Juarez
Title	FT English Faculty
Phone	224-4000 ext. 52294
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### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu



## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	ENGL
Number	2630
Title	British Literature I
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2630
Name	British Literature I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Read and discuss representative works of British writers from its origins in Old English to the 18th century to understand cultural and historical movements which influenced those writers and their works.
2. Identify the characteristics of various British literary genres, such as the essay, novel, short story, poetry, and dramatic literature.
3. Apply effective analytic and interpretive strategies to British literary works using academic conventions of citation and style.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

In British Literature I, students will read and examine British literature from origins in Old English to the 18th century, and they will consider how these texts (including poetry, plays, essays, novels, and short stories) reflect aesthetic, cultural, and ideological debates central to early British culture and society. Class discussions and lessons will engage students' reading of assigned literary works, and students will be largely responsible for posing questions and offering opinions about each text. Essay exams and writing assignments present students with questions related to British literature, and students must closely read assigned selections to address each question (see attached: Analytical Writing Assignment with rubric). In writing analytical research papers, students will support interpretations of British literature by citing relevant textual details, locating patterns and themes, noticing language choices, and considering the contextual factors that shaped the text's production (see Analytical Writing Assignment rubric). For research-based literary analyses, students will be asked to conduct secondary research related to the author's life, the text's socio-historical context, the cultural perspective, or associated literary movement; in so doing, students will evaluate the evidence gathered (determining the validity of sources and their relevance to the research topic). Through the process of analyzing literary texts, students will develop plausible interpretations that can be supported with the text and with other research. Instructors will evaluate students' critical thinking using the following criteria: the student's analysis is focused and presents a clear interpretation of the text; the analysis is supported with details about the text's language, patterns, themes, or ideas; the student writes in a coherent and accurate style; and the student cites sources appropriately using MLA style.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

In this course, students will broaden their understanding of British literature, including its traditions and major authors; they will explore various influences and sources of these texts and examine the connections between literature, society, and historical events. Students will gain skills in intercultural reasoning and intercultural competence by evaluating the social issues revealed in assigned texts and by considering how the ideas presented in these texts illustrate social dynamics in Britain and abroad. Students will compare and contrast British literary works to understand social and cultural relationships of the past, and they will be asked to consider how these relationships might compare to those of contemporary society. Further, students will consider how course texts have been informed by and have shaped views about British imperialism and colonialism, striving to understand the lasting effects of British conquest around the world. Students will gain skills in civic discourse, as well as local and global civic knowledge and engagement, as they participate in class discussions and compose blogs, analytical papers, or projects related to early British literature. Students will be asked to explore and draw conclusions from the cultural, historical, social, political, and economic factors that may shape a given piece of literature. Instructors will evaluate students' competency in personal and social responsibility based on how concretely students identify the social themes of an assigned text and how effectively students draw upon socio-historical details to support interpretations, opinions, and responses.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Reading, discussing, and writing about literary texts require students to consider the authority and value of information and to use this knowledge ethically when posing interpretations. During class discussions for example, students may be presented with a question about an assigned text or its socio-historical period; students must develop a response that can be supported both with details from the text and with contextual evidence, such as information about the time period or location in which the text was produced. Students will develop knowledge of information structures by studying early British literary texts; these explorations will aid students in recognizing how ideas and values are communicated through literary texts, as well as the insights these texts might provide about British culture, society, or history. Students will research various aspects of early British literature, from individual authors, to specific historical periods, social events, or literary movements. In analyzing assigned texts, students will consider a question related to a literary text or period, analyze and evaluate information, and synthesize the ideas gathered to pose an informed examination of British literature (see Analytical Writing Assignment with rubric). Students will also be asked to consider how they might relate themes of early British literature to other situations, including current day social issues and events. Instructors will assess students' information and digital literacy based on their inclusion of relevant and appropriate information and their competency in formulating a research question and arriving at an answer.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## ENGL 2630\_AWA\_Shakespeare's Language

Filename: ENGL\_2630\_AWA\_Shakespeares\_Language.doc Size: 24.6 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## ENGL 2630 Rubric

Filename: ENGL\_2630\_Rubric.docx Size: 12.9 kB

## Application: 0000000211

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning

3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins
Title	Division Chair
Phone	5757694909
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### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

**Institutional Course Information**

Prefix	PHYS
Number	152
Title	General Physics II and Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	PHYS
Number	151
Title (if applicable)	General Physics I and Lab

**New Mexico Common Course Information**

Prefix	PHYS
Number	1240C
Name	Algebra-based Physics II and Lab

**A. Content Area and Essential Skills**



## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

#### Student Learning Outcomes

Upon completion of this course, the student will be able to:

1. Be able to state Coulomb's Law and Gauss's laws and apply them.
2. Apply the concepts of electric charge, electric field and electric potential to solve problems.
3. Analyze simple DC and AC circuits.
4. Apply the Lorentz force to solve problems.
5. Apply Faraday's law of induction (and Lenz's law) to solve problems.
6. Apply ray optics to practical lens systems such as microscopes and corrective lenses.
7. Apply the wave nature of light to the phenomena of reflection, refraction, and diffraction.

Optional Topics (some schools include these in Physics I, others in Physics II):

1. sound
2. waves
3. heat
4. thermodynamics
5. oscillatory motion
6. modern physics

#### Optional Student Learning Outcomes

1. Describe the fundamental properties of periodic motion.
2. Explain and apply the basic concepts of sound and wave motion.
3. Explain the basic concepts of heat and thermodynamics.
4. Explain the basic concepts of quantum theory and special relativity.

## Algebra-based Physics II Laboratory

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

1. Explain the scientific method.
2. Test ideas using modern laboratory equipment.
3. Estimate experimental uncertainties using statistical methods.
4. Use computers to analyze and report laboratory results.
5. Draw appropriate conclusions from quantitative scientific observations.
6. Accurately and clearly, communicate the results of scientific experiments.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

### **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

While using scientific inquiry and the scientific method throughout the semester, students encounter and are assessed with open-ended questions and problems on homework assignments, tests, the final exam, and lab exercises. These questions and problems will require critical thinking skills in order to determine an appropriate response to the questions. Students will also be required to use critical thinking skills by acquiring given data, discerning the unknown factors of the problem, evaluating the data to determine a possible solution pathway, and finally substituting data into an equation to produce a reasonable and accurate conclusion. These critical thinking skills then allow the student to choose and then develop appropriate problem solving strategies to successfully calculate answers to the problems they will encounter across the semester. The questions will require more than simple one-word answers and the students will be evaluated on how well they have analyzed not only their answer but also why they did not choose to select alternative responses to the question. When students are performing calculations, the primary criteria for grading will be whether they arrived at the correct answer to the problem. However, they will also be evaluated on their approach to the problem. The students will be expected to demonstrate their ability to recognize what they are given and what they are asked to determine. When there are multiple approaches to solving a problem, students receive credit for presenting a clear and logical solution that demonstrates critical thinking and for developing their own original solutions.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will perform calculations throughout the semester involving basic math skills on homework, labs, tests, and the final exam. These calculations will involve straightforward applications of three-variable equations, but they will also involve equations involving as many as six variables that the students will learn to rearrange in order to solve for the desired quantity. The students will also learn to solve problems and represent data that include quantities expressed in scientific notation such as the speed of light in a vacuum and Coulomb's law constant. Students will learn to analyze their answers and then determine if they have a reasonable result based on order of magnitude estimations. The students are assessed on the how well they organize and show their work in addition to the correctness of their answers. Students will be allowed to receive partial credit based on the work they show if they fail to calculate the correct answer as long as they show their work and any errors in their calculations can be identified. This allowance provides learning reinforcement of analysis of quantitative arguments and application of quantitative models. Students have opportunities to learn from any previous mistakes. These opportunities promote future success with problems on subsequent assignments, labs, tests, and the final exam.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Modern diesel-electric railroad locomotives require a multitude of electrical components to effectively move freight and passengers over railroad tracks. These include a main AC generator powered by the diesel engine prime mover, which provides either AC or DC power to the traction motors, depending on the model of the locomotive. The traction motors also function as generators to help slow the train down when it is going downhill, and the electricity generated in this manner is expelled as waste heat to the surroundings. During their study of physics topics like Faraday's law and electromagnetic induction, students will work in groups and collaborate to learn how physics systems are tied together to allow complex machines like the locomotive to function. Additionally, students learn to determine the energy costs associated with, in this case, the work that a locomotive can produce and how this compares to other methods of transportation. This type of exercise will require the team of students to perform calculations, compare that work with other groups, and determine if the unit conversions and proposed solutions involved are compatible with the culture that will apply the solution. The students will analyze their results and discuss the advantages and disadvantages of the options available to accomplish the task and any impacts that may be pertinent locally or globally. These scenario/case studies engage students as they collaborate and consider the impact that physics has on cultures, resource sustainability and wise use, ethics, and civic responsibility. Personal and social responsibility skills are assessed via scenario/case studies, quizzes, and exams.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



## Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Phys 1230C Test Chaps 6-7

Filename: Phys\_1230C\_Test\_Chaps\_6-7\_CY3KsvA.doc Size: 25.1 kB



## Upload Rubric

Completed - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Phys 151 Overview-Sched

Filename: Phys\_151\_Overview-Sched\_bYfyDF.doc Size: 51.7 kB

## Application: 0000000018

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



## Application Form

Completed - Mar 15 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins
Title	Division Chair
Phone	5757694909
Email	don.scroggins@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Math

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	MATH
Number	213
Title	Statistical Methods 1
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	MATH
Number	110
Title (if applicable)	College Algebra



## New Mexico Common Course Information

Prefix	MATH
Number	1350
Name	Introduction to Statistics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the general concepts of statistics.
  - a. Explain and evaluate statistics used in the real world (from a news article, research project, etc.).
  - b. Use statistical vocabulary appropriately.
  - c. Distinguish between descriptive and inferential statistics.
  - d. Distinguish between qualitative and quantitative data.
  - e. Distinguish between populations and samples, and parameters and statistics.
  - f. Give examples of independent and dependent variables.
2. Presentation and description of data.
  - a. Present data graphically using histograms, frequency curves and other statistical graphs.
  - b. Interpret graphs of data, including histograms and shapes of distributions.
3. Summarize data using measures of central tendency and variation.
  - a. Calculate and interpret the mean, median, and mode to describe data.
  - b. Calculate and interpret range, variance, and standard deviation to describe data.

4. Present the concepts of probability.

- a. Interpret basic probabilities.
- b. Calculate probabilities using compound probability rules and the binomial distribution.
- c. Calculate probabilities using the standard normal distribution and relate them to areas under the curve.
- d. Determine if the binomial distribution can be approximated with the normal distribution.
- e. Describe the relationship between the sampling distribution and the population distribution.
- f. Use the central limit theorem to approximate the probability distribution and calculate probabilities.

5. Compute point and interval estimates.

- a. Determine the confidence interval for a parameter.
- b. Interpret the confidence level and margin of error.
- c. Determine whether a statistical technique is appropriate under stated conditions.

6. Perform hypothesis tests.

- a. Determine whether a statistical test is appropriate under stated conditions.
- b. Identify null and alternative hypothesis.
- c. Perform and interpret statistical tests (e.g. z-test, t-test, one-tailed and two-tailed, one-sample, two-sample) and determine whether data is statistically significant.
- d. State the conclusion of a hypothesis test.
- e. Interpret a p-value as compared to a significance level.
- f. Explain why a test can lead us to reject a null hypothesis, not accept one.
- g. Distinguish between Type I and Type II errors.

7. Analyze data using regression and correlation.

- a. Explain the difference between correlation and causation.
- b. Construct and interpret scatter plots.
- c. Calculate and interpret the linear correlation coefficient.
- d. Determine and use the equation of a least-squares regression line between two variables to make predictions.
- e. Interpret the meaning of the coefficient of determination.

8. Optional topics.

- a. Inter-quartile range, box-plots, stem-and-leaf plots.
- b. Combinations and permutations.
- c. The Poisson distribution.

- d. Statistical power.
- e. Chi-square.
- f. Analysis of variance.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

### **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Student communication through various genre and media is one of the primary focuses across the semester of this course. Students complete activities and/or discussions relating to real-world scenarios via video, current articles, advertisements and selections from their text. They evaluate prompts for major themes of statistics, correct use of terminology and potential abuses of statistics. Students respond to questions within each activity or discussion orally and/or in writing. Additionally, students respond to their peers' evaluations and offer alternative perspectives.

Students evaluate and clearly articulate information presented in a table or statistical graph. They also correctly summarize the meaning of confidence intervals and formulate a non-technical conclusion of findings in hypothesis tests. They describe components of experimental design and specify the pros and cons of each. They recognize and explain the focus of a study. Throughout the semester, this course utilizes formative assessments such as homework, chapter quizzes and unit exams to allow for additional practice in use of statistical terms and concepts in a variety of ways.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Across the semester, students encounter a variety of problem settings including but not limited to raw data; data summarized in a table or graph; and data statistics given in the form of a real-world problem such as blood platelet counts, Mendel's famous genetics experiment or the probability of overbooking a flight. Students organize raw data into frequency tables. Which are further explored by creation of an appropriate statistical graph. From these, students identify data, which comes from a normal distribution, by observing key features that are typical of normality and provide specific supporting reasons. Assessments such as homework, chapter quizzes and unit exams are used to assess critical thinking skills.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

With a series of learning units in this course, students represent quantitative information through use of one- and two-way frequency tables, probability distributions, statistical formulas and graphs. Formulas may include but are not limited to mean and standard deviation in various contexts (raw data, estimates of a frequency table, binomial and Poisson distributions and central limit theorem), variance, percentiles, addition and multiplication rules of probability, error formulas for confidence intervals and test statistic formulas used in hypothesis testing.

Students analyze data in frequency tables using methods such as Goodness-of-fit tests and Chi-square tests for independence. Students also perform hypothesis tests on claims about proportions and means (for both one and two samples), variance and standard deviation (for one sample), means of matched pairs, linear correlation between two variables, and analysis of variance (ANOVA) on three or more samples. They use a variety of approaches including the p-value, critical value and confidence interval methods.

Students create graphs of statistical data (numerical and categorical) using graphs such as a histogram, boxplot, frequency polygon, dot plot, stem-and-leaf plot, Pareto chart and scatterplot. Homework problems, chapter quizzes and unit exams assess critical thinking skills.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 5 2019



Upload Assessment

Completed - Mar 5 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Sample assessments for Stats

Filename: Sample\_assessments\_for\_Stats.zip Size: 404.7 kB



### Upload Rubric

Completed - Mar 5 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Sample syllabi for Stats

Filename: Sample\_syllabi\_for\_Stats.zip Size: 74.6 kB

## Application: 0000000160

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
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Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	EN
Number	223C
Title	American Literature II
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	2620
Name	American Literature II

**A. Content Area and Essential Skills**



## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Recognize the traditions of American literature and their connection to issues of culture, race, class, and gender.
2. Demonstrate familiarity with a variety of major works by American authors.
3. Explore the various influences and sources of American literature.
4. Apply effective analytic and interpretive strategies to American literary works using academic conventions of citation and style.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Instructors provide instruction on critical thinking skills related to reading, writing, and research

throughout the course. Students analyze readings, including fiction, poetry, plays, and nonfiction. With guidance from the instructor, learners engage in dialogue to interpret the readings while also discussing the cultural and historical significance of the texts.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine. Students use secondary sources as evidence in analyzing primary sources (works of literature) in a research paper.

Reasoning/Conclusion: Students use support and evidence from primary and secondary sources to defend a thesis

statement while avoiding common logical fallacies. Students also practice critical analysis by commenting on each

other's rough drafts for essays and the research paper.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students can identify and analyze personal and social justice

issues in a variety of texts, including a diversity of social and cultural contexts.

Ethical reasoning: Students analyze texts for ethical thought and action, including individual actions of characters and separating individual character thought and action from the commentary and thematic implications offered by the text as a whole. Students discuss literature as a social activity that reflects, promotes, and critiques values while comparing and contrasting these perspectives with belief systems currently operating in the world.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact

and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments. Instructors provide students with local opportunities to interact and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The research paper in this course is the centerpiece assignment and is worth a minimum of 30% in all sections. Instructors present students with lessons on finding, evaluating, and citing sources in analytical and argumentative writing. Avoiding plagiarism through ethical use of sources and citation is a key topic. Instructors require the use of professional sources from reputable publishers and peer reviewed journals. Student work is evaluated for ethical use of sources with Turnitin. Instructors offer guidance on interpreting Turnitin reports to help students responsibly and ethically cite sources.

Digital Literacy: Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers. Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the research paper.

Information Structure: Students practice paraphrasing and summarizing information from professional secondary sources. Students integrate multiple primary and secondary sources into a research paper structured around a developed thesis statement and topic sentences in MLA format.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis of the literary work in question.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### EN Assessment

Filename: EN\_Assessment\_SHI4QQN.doc Size: 737.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000035**

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



Application Form

Completed - Mar 13 2019

#### Application Form

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
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7. Other: 3 Essential Skills chosen by the institution

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### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	PHYS
Number	1240
Title	Algebra-based Physics II
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	PHYS
Number	1240L
Title (if applicable)	Algebra-based Physics II Lab

## New Mexico Common Course Information

Prefix	PHYS
Number	1240
Name	Algebra-based Physics II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. State and apply Coulomb's Law and Gauss's laws
2. Apply the concepts of electric charge, electric field and electric potential to solve problems
3. Analyze simple DC and AC circuits
4. Apply the Lorentz force to solve problems
5. Apply Faraday's law of induction (and Lenz's law) to solve problems
6. Apply ray optics to practical lens systems such as microscopes and corrective lenses
7. Apply the wave nature of light to the phenomena of reflection, refraction, and diffraction



## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Describe the fundamental properties of periodic motion
2. Explain and apply the basic concepts of sound and wave motion
3. Explain the basic concepts of quantum theory and special relativity

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: In some labs, students have a task to test a hypothesis in a physical situation such as current through resistors. They state a hypothesis to set the problem they will solve (Appendix A).

Evidence Acquisition: In most labs, students acquire evidence experimentally, as by measuring current, voltage, and resistance (Appendix A), or doing qualitative experiments on electrically charged objects (Appendix B), or measuring the voltage output of a transformer (Appendix C).

Evidence Evaluation: Students evaluate their lab results for accuracy and discuss possible sources of error (Appendix A, C).

Reasoning/Conclusion: Students state conclusions based on their lab results (Appendix A, C). In homework and test problems, students determine what solution method to use (Appendix D). Also, in some homework problems and a few test problems, students answer conceptual questions on topics such as the distinction between velocity and acceleration, showing the reasoning that led them to their understanding of the physical situation in question (Appendix D question m, Appendix E).

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information, Application of Quantitative Models: On homework and tests, students read questions and communicate answers using mathematical notation including units. They work the problems by applying quantitative models presented in the textbook and in class. (Appendix D). These are the main assessments of the lecture course. They do the same with problems that arise in the labs (Appendices A, B, C). Also, on labs, students describe their procedures and express their results and conclusions (Appendices A, B, C).

Analysis of Quantitative Arguments: Students are given quantitative physics arguments and analyze them to determine whether they're correct or incorrect, and if incorrect, what the mistake(s) is or are (Appendix F).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students answer homework questions on global issues of sustainability related to physics, such as nuclear waste (Appendix F).

Collaboration skills, teamwork and value systems: In every lab, students work together, and in some, they reflect on their collaboration, addressing specific questions about division of labor and conflict resolution and how they could improve their collaboration (Appendix B).

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 10 2019



**Upload Assessment**

**Completed** - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**PHYS 1240 assignments**

**Filename:** PHYS\_1240\_assignments.pdf **Size:** 532.1 kB



**Upload Rubric**

**Completed** - Mar 10 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**PHYS 1240 rubric**

**Filename:** PHYS\_1240\_rubric.docx **Size:** 13.5 kB

**Application: 0000000226**

Suzanne Balch - suzbal62@hotmail.com

NM General Education Curriculum



**Application Form**

**Completed** - Mar 22 2019

**Application Form**

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### Contact Information

Name	Suzanne Balch-Lindsay
Title	Asst VP Academic Affairs
Phone	5755622314
Email	suzanne.balch@enmu.edu

### Submitting Institution

Name of HEI	ENMU Portales
Submitting Department	Physical Sciences

### Chief Academic Officer

Name	Jamie Laurenz
Email	jamie.laurenz@enmu.edu

### Registrar

Name	DeLynn Bargas
Email	DeLynn.Bargas@enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	PHYS
Number	123
Title	Physics of Music
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	PHYS
Number	123LP
Title (if applicable)	Physics of Music

## New Mexico Common Course Information

Prefix	PHYS
Number	1125
Name	Physics of Music

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate converting units and other aspects of dimensional analysis in the working of numerical problems.
2. Apply basic classical mechanics to static and dynamic fluids, including Archimedes's principle and Bernoulli's principle.
3. Apply the general properties of waves to simple models of musical instruments.
4. Demonstrate knowledge of basic operating principles of wind, string, and percussion instruments.
5. Demonstrate knowledge of how objectively measurable properties of sound waves correspond to the perceptions of pitch, loudness, and timbre.
6. Demonstrate understanding of the description of vibrations and waves in terms of Fourier's Theorem and normal modes.
7. Demonstrate understanding of vocalization in terms of physical principles such as resonance and fluid dynamics.
8. Demonstrate understanding of how the ear works.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Demonstrate knowledge of basic music theory, modes, temperaments, consonance and dissonance.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Consistent with decades of pedagogical research by the physics community, critical thinking is fostered and assessed using conceptual questions in classroom discussions. Successful completion of a concept question requires

1. The interpretation and delineation of a problem in terms of fundamental physical principles.
2. Identifying the information provided and implied.
3. Evaluation of the relevance of each item of information.
4. The development of a line of reasoning that produces an answer/prediction specific enough to be wrong.

An accepted method of quantifying pedagogical success is the “gain”, defined as  $G = (S_f - S_i) / (100 - S_i)$  where  $S_i$  and  $S_f$  are pre and post scores in percent. Initial scores are collected in class via iClicker electronic polling. Selected conceptual questions addressing each SLO are presented prior to instruction. During the semester four paper exams are administered. Each exam includes the selected conceptual questions, along with others. Gains are calculated for the selected conceptual questions. The selected conceptual questions are placed in groups according to SLO and gains presented as histograms. This guides the focusing of efforts in changing pedagogy from year to year as well as providing assessment of the current year.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

In analyzing conceptual questions students must interpret quantitative information expressed symbolically, graphically, and in written English. In addition, students identify appropriate mathematical models (based on physical principles) to represent quantitative information in these contextual problems. In many conceptual questions, a numerical data is provided in written and/or graphical format and students must apply those models to generate numeric predictions. An accepted method of quantifying pedagogical success is the “gain”, defined as  $G = (S_f - S_i) / (100 - S_i)$  where  $S_i$  and  $S_f$  are pre and post scores in percent. Initial scores are collected in class via iClicker electronic polling. Selected conceptual questions addressing each SLO are presented prior to instruction. During the semester four paper exams are administered. Each exam includes the selected conceptual questions, along with others. Gains are calculated for the selected conceptual questions. The selected conceptual questions are placed in groups according to SLO and gains presented as histograms. This guides the focusing of efforts in changing pedagogy from year to year as well as providing assessment of the current year.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students read Richard Feynman’s speech “Cargo cult science” describing characteristics distinguishing science from pseudoscience. Each student writes a short paper addressing a contemporary example of a product, practice, or other manifestation of pseudoscience. In writing the paper, the student contrasts how scientific standards of ethics compare to what suffices in other contexts. The implications for these differing ethical standards manifest themselves in the outcomes for society at large. For example, in some instances the financial or health implications for consumers will be demonstrated. In this way, students compare and contrast scientific and non-scientific ethical perspectives and resulting impact of the product, practice, or other manifestation.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

Pending

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHYS123-1125-PhysicsOfMusic asse ex

Filename: PHYS123-1125-PhysicsOfMusic\_asse\_ex.pdf Size: 458.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000257**

Sara Vigil - savigil@luna.edu

NM General Education Curriculum



Application Form

Completed - Mar 26 2019

Application Form

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## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Betsy Sanchez
Title	Faculty
Phone	5054542554
Email	bsanchez@luna.edu

### Submitting Institution

Name of HEI	Luna Community College
Submitting Department	STEM

### Chief Academic Officer

Name	Sharon Lalla
Email	slalla@luna.edu

### Registrar

Name	Henrietta Maestas
Email	hmaestas@luna.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	MATH
Number	180
Title	College Algebra
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

Yes

### Co-requisite Course

Prefix	NA
Number	NA
Title (if applicable)	NA

### New Mexico Common Course Information

Prefix	MATH
Number	1220
Name	College Algebra

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

**C1. Graph Functions.**

- a) Sketch the graphs of linear, higher-order polynomial, rational, absolute value, exponential, logarithmic, and radical functions.
- b) Sketch a graph using point plotting analysis techniques, including basic transformations of functions such as horizontal and vertical shifts, reflections, stretches, and compressions.
- c) Determine the vertex, axis of symmetry, maximum or minimum, and intercepts of a quadratic equations.

**C2. Solve various kinds of equations.**

- a) Solve quadratic equations using factoring, completing the squares, the square root method, and quadratic formula.
- b) Solve exponential and logarithmic equations.
- c) Solve systems of two or three linear equations.

**C3. Demonstrate the use of function notation and perform operations on functions.**

- a) Find the value of a function for a given domain value.
- b) Add, subtract, multiply, divide and compose functions.
- c) Determine the inverse of a function.
- d) Compute the difference quotient for a function.
- e) Correctly use function notation and vocabulary related to functions, i.e. domain, range, independent variable, of, even symmetry, etc.

**C4. Model/Solve real-world problems.**

- a) Use and understand slope as a rate of change.
- b) Apply knowledge of functions to solve specific application problems.
- c) Solve compound interest problems.
- d) Solve application problems, involving maximization or minimization of a quadratic function.
- e) Solve exponential growth and decay problems.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Solve polynomials and rational expressions
2. Identify, solve, and simplify radical and rational expressions
3. Evaluate and analyze graphs of functions (linear, quadratic, and higher degree polynomials) and find their domain
4. Identify and graph shifts, reflections, and non-rigid transformations of functions
5. Find arithmetic combinations and compositions along with inverse functions graphically
6. Solve and use equations and inequalities algebraically (linear, quadratic, and higher degree)
7. Solve and graph rational, exponential and logarithmic functions
8. Model real-life situations through graphs (linear, quadratic, exponential and logarithmic)

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will need to write a response to a mathematical problem. The written response will need to include the statement of the problem, the steps to solving the problem, and a conclusion that can be found from the mathematical operations. A mathematical notation will be used in the explanation of the solution. Students need to understand the strategies used to solve the problem (which addresses genre and medium awareness), and they need to state the implications of the solution when solving a real world problem (which addresses evaluation and production of arguments).

We expect that a written solution requires the optimization of a quadratic function that explains either: the motion of a projectile, the area of a region, or profit of a business that would be suited for assessing communication skills. Application and versatility will be addressed since students will need to know how to apply the mathematical reasoning and arguments to each scenarios. Students will learn to extract the relevant facts in the description of the problem (addressing strategies for understanding and evaluating messages), write and solve a quadratic function, complete the square to find the vertex of a function, and then explain why the vertex is the final answer. They will use the properties of the quadratic function to explain why there exists only one solution.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students are required to collect information from the description of the problem. They will assess the problem setting before writing a mathematical equation. They will optimize the use of a quadratic equation that will describe either: the motion of a projectile, the area of a region, or profit in a business. Students will determine what needs to be optimized (area, height, or profit) and construct a function that will define how the dependent variable will be determined from an independent variable (length, time, or price). They will need to understand the construction of a function that relies on the knowledge of acceleration and velocity, definition of area, and the definition of motion of a projectile, area of a region or profit in business respectively. They will extract relevant numbers that are essential to building a correct function; thereby addressing evidence. They will need to evaluate the problem and interpret the algebraic solution in the context of the problem description. Students will interpret the x- and y-coordinates of the vertex of a problem. Critical thinking will be used to determine how to evaluate the problem and which formula will be used. They will construct equations to solve the problem and interpret the solution in the context of the original problem.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students need to construct and understand a function and function notation. They will extract information from the problem description to determine the independent variable name and the independent variable will be used to form a quantity of interest which represents a function. They will learn that functions are mechanisms for transforming numbers into different numbers, and can represent quantitative information. They will analyze quantitative data that can be assessed using functions to transform numbers correctly. They will find the vertex of a quadratic function which requires quantitative and algebraic arguments. They will be able to identify the proper steps to complete the square, which require them to identify coefficients or powers of an independent variable and factor numbers and trinomials into perfect squares. They will be able to determine the construction of a function that should be applied to three different models: projectile motion, area, and profit in business. They will need to understand the function that provides a tool and strategy to optimize a quantity of interest in height, area, or profit. They will need to use quantitative information and interpret results of computation in the context of the real world applications.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

NA

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 26 2019



Upload Assessment

Completed - Mar 26 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Math1220 Assessment Luna Community College



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000240

Annemarie Oldfield - annemarie.oldfield@roswell.enmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Ron
Title	Fury
Phone	575-624-7021
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### Submitting Institution

Name of HEI	Eastern New Mexico University-Roswell
Submitting Department	Technical Education

### Chief Academic Officer

Name	Dr. Ken Maguire
Email	ken.maguire@roswell.enmu.edu

### Registrar

Name	Dr. Linda Neel
Email	linda.neel@roswell.enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	CIT
Number	151
Title	Basic Computer Skills II
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

No

**Will this course only count toward General Education for the AAS degree (at your institution)?**

Yes

**Co-requisite Course**

Prefix	na
Number	na
Title (if applicable)	na

**New Mexico Common Course Information**

Prefix	BCIS
Number	1113
Name	Basic Computer Skills

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Other - Choose 3 essential skills below

## Choose 3 Skills

### Responses Selected:

Communication

Information & Digital Thinking

Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Describe basic information technology terminology. 2. Identify and use the hardware components of IT systems. 3. Describe and apply concepts of file management. 4. Describe the basic concepts of application and operating system software. 5 Demonstrate how to use IT systems for communication (Microsoft Word, Microsoft PowerPoint, e-mail). 6. Describe the basic concepts of information management, databases, and database management systems. 7. Describe the social impact of information technology. 8. Identify and explain important ethical, security, and privacy issues in information systems. 9. Create and use Microsoft Excel spreadsheets. 10. Use Internet search engines for research.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Students should be able to prepare business documents. 2. Students should be able to manage records. 3. Students should be able to demonstrate business communication skills. 4. Students should be able to utilize appropriate office technology.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will engage in a series of activities throughout the semester to meet the criteria of this skill. For the subsection of Genre and Medium Awareness, Application and Versatility, students will be a) completing bi-weekly written discussion board posts via the campus LMS where they reflect on the provided readings and make critical connections between their lives and the content of the reading, b) developing and delivering a visual and oral presentation on a specified topic, c) completing bi-weekly written reflections where the students reflect and evaluate arguments and content specific to the digital world, and d) completing various activities in different digital platforms (such as Microsoft Word, Excel, and/or PowerPoint) where the students will practice mastery of different communication techniques (written, visual, and numeric). For the visual and oral presentation, the students will learn how to use presentation software to effectively communicate their ideas by learning how to display their presentation as a printed hard copy, present on a monitor, share in real time on the Web, or save as a video for others to watch. This will allow students space to practice various mediums for delivering content, as well as analyzing which forms of communication are best suited for specific situations. For the subsection of Strategies for Understanding and Evaluating Messages, students will be a) presenting a visual and oral presentation where the students will evaluate the various perspectives of contemporary digital ethical issues; b) participating in bi-weekly discussion forums where they seek key arguments and clarify counter-arguments through Socratic questioning techniques in order to analyze and apply essential concepts and theories; c) completing bi-weekly written reflections where students work on locating supporting documentation for their evaluation of the topics. For the final subsection of Evaluation and Production of Arguments, students will be completing bi-weekly written reflections (alternating with the bi-weekly discussion forums) where they a) identify and develop positions on identified digital controversies which are then supported with evidence and analysis; and b) evaluate and support their analysis of provided examples, with varying levels of competency, for different digital platforms. For example, in part A, students would reflect and evaluate a contemporary controversy surrounding cyber security (such as a data breach). For part B, students would be given “Good, Bad, and Ugly” examples of PowerPoint presentations that they would then evaluate and categorize which ones fit into which categories, while providing supporting evidence.

Assessment of the communication essential skill will include informal feedback in class, as well as the use of rubrics to assess written and oral assignments. These rubrics are included.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

not one of the three chosen

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

not one of the three chosen

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

For the subsection of Ethical Reasoning, students will engage in discussion forums, written reflections, and individual presentations where they will not only recognize a variety of ethical theories and place them in specific contexts, but will also describe ethical conundrums while addressing the relationship between ethics and moral norms. This is an essential component of the three assignments which is evident in the various topics that will be addressed. Some of the topics are: cyber security, net etiquette, data security, and confidentiality. The digital world requires an ever increasing level of ethical rigor, especially as technology develops, making this a key component of the class.

Students will address the subsection of Civic Discourse, Civic Knowledge and Engagement (Local and Global) by participating in discussion forums where they engage in respectful civil dialogue (guided by Group Discussion Norms and Net etiquette) applying the various theoretical and personal perspectives' viewpoints of real-world situations. This enables them to navigate the potential pitfalls usually connected to contentious issues surrounding the digital world and ethical norms. Further, this allows them to identify and address the local and global viewpoints of the real-world situations. Additionally, students will complete a variety of written assignments where they will summarize, interpret, and synthesize provided reading and visual materials in bi-weekly discussion forums and alternating bi-weekly reflections. A focus of the material will be on providing varied opinions on the different ethical issues to allow students to evaluate and appreciate a variety of perspectives. Finally, the students will engage in peer evaluation of the individual presentations, which will also involve providing verbal feedback to the students. This peer-level assessment will allow for students to practice providing and receiving critical feedback in a constructive manner. Assessment of this skill will include informal feedback within the class, as well as formal assessment via rubrics and feedback via the LMS.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Students will engage in a series of activities throughout the semester to meet the criteria of this skill. For the first sub-section, Authority and Value of Information, students will be a) completing bi-weekly written discussion board posts via the campus LMS where they will make informed choices regarding online awareness of the various ethical issues facing the digital world, b) developing and delivering a visual and oral presentation on a specified topic where they recognize that information is produced by individuals/communities/organizations and give proper credit to attribute information to the correct sources, and c) completing various activities in different digital platforms (such as Microsoft Word, Excel, and/or PowerPoint) where the students will practice safeguarding the personal information of self and others when utilizing and creating various data sets.

For the second sub-section, Digital Literacy, students will be tasked with identifying and using the specific vocabulary needed to navigate the digital world, as well as the appropriate applications within the digital world (such as Microsoft Office, Web Browsers, et cetera). This will be assessed in weekly quizzes that use a variety of Bloom's Taxonomy levels in order to assess identification and application. They will be using the LMS to engage in their bi-weekly discussion forums, a common educational and social communication platform. They will be submitting weekly activities using the various software (i.e. Microsoft Office Suite) via the LMS and third-party software component connected to the textbook.

For the third sub-section, Information Structures, students will be required to select and use the appropriate systems, collections, and applications based on the need identified in the various weekly assignments. This will involve them learning the different applications (such as Microsoft Word, Excel, PowerPoint, and Access, current LMS, and third-party software) to understand the capabilities of each application to identify the best tool for the task required. One way that this will be assessed is in weekly quizzes using a variety of knowledge levels. Further, the students will be using current digital collections, as well as the internet, to gather information and research for their visual and oral presentation on a specified ethical issue. This will involve the students navigating different digital platforms while practicing using keywords and simple search strategies to find relevant information for their topic. They will then need to make decisions on which applications are more appropriate for the various components of the assignment (i.e. Word for the written response, PowerPoint for the visual presentation, et cetera). This will be assessed informally in class, as well as formally through the use of rubrics.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

under construction

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

CIT 151 PowerPoint Final Handout Common Core

Filename: CIT\_151\_PowerPoint\_Final\_Handout\_Common\_Core.doc Size: 90.6 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000073**

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



Application Form

Completed - Mar 15 2019

Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dr. Nancy JB Sloan
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Email	njbsloan@gmail.com

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	GEOL
Number	113
Title	Physical Geology and Lab
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	n/a
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	GEOL
Number	1110C
Name	Physical Geology and Lab

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes



## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

### Student Learning Outcomes - Lecture

1. Recall, describe or explain geologic vocabulary.
2. Identify or explain aspects of the geologic time scale and compare the uses and limitations of relative and absolute dating.
3. Recognize or explain the evidence used to support the theory of plate tectonics. Describe or identify how plate tectonics is related to the structure and features of the Earth.
4. Describe the formation of, and describe, compare, and classify minerals.
5. Identify or describe the three main rock types, how each forms in the context of the rock cycle and what each indicates about its environment of formation.
6. Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.
7. Describe or discuss the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
8. Recognize or describe the geologic processes involved in the formation and concentration of geologic resources.

### Student Learning Outcomes - Laboratory

1. Use physical properties to identify mineral specimens.
2. Describe, classify, and identify igneous, sedimentary, and metamorphic rocks and their textures.
3. Utilize the principles of stratigraphy to provide an explanation of the geologic history portrayed in a photograph or cross-section.
4. Explain how contour lines are used to represent topography, use map scales to measure distances on the ground, and construct topographic profiles.
5. Identify landforms from images and topographic maps.
6. Interpret geologic maps and construct geologic cross-sections.
7. Acquire and communicate scientific data, ideas, and interpretations through written, oral, or visual means. Examples may include creating and describing graphs, maps and photos.
8. Apply critical thinking skills such as inductive, deductive, and mathematical reasoning to solve geological problems.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

Critical thinking skills are developed in this course as students engage in assignments across the semester that help them learn to make observations and interpret those using basic geological and mathematical concepts via the scientific method and scientific inquiry. Laboratory exercises allow students to acquire evidence, make observations, and use geological techniques to evaluate data in order render reasonable conclusions. These laboratory assignments include but are not limited rock and mineral identification, topographical map reading and interpreting, using data sets to determine locations, a Geological Time lab where students determine absolute time of radioactive data sets and use cross section data sets to determine relative time through a 20 - step procedure. Assessment of critical thinking skills is accomplished via lab reports, quizzes, and formal exams.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students use quantitative reasoning throughout the semester in a variety of labs from stream pollution modeling, topographical maps and map data sets, ground water elevations, water conservation, well data sets and radioactivity data sets to determine the age of samples. The Communication/Representation of Quantitative Information is addressed through students choosing a topic from geological hazards, write a 10-page research paper from peer-reviewed resources and present their findings to the class in a 10-20 minute presentation with visual aids. This prepares students for interpreting data through written communication form and oral form in a classroom setting.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

In labs throughout the semester, students work together in teams and learn to collaborate on assignments. When working on topographical maps, students learn about the local geology and the public land system and the human factors that influence their condition. Discussions of local environmental issues such as water table pollution, crop farming and waste contamination are common, along with global discussions of water resources and waste disposal. Assessment of personal and social responsibility skill is accomplished with discussion forums, quizzes, lab reports, and formal exams.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 15 2019



### Upload Assessment

Completed - Mar 15 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### GEOL Assessment samples

Filename: GEOL\_Assessment\_samples.zip Size: 1.6 MB



### Upload Rubric

Completed - Mar 15 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Syllabus For Geology 113-Srng 2019A

Filename: Syllabus\_For\_Geology\_113-Srng\_2019A.docx Size: 78.9 kB

## Application: 0000000121

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



### Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Diné Studies

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

## Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	NAV
Number	101
Title	Introduction to Navajo Language – Non-Speakers (Conversation)
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	NAVA
Number	1110
Name	(No response)

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Other - Choose 3 essential skills below

#### Choose 3 Skills

#### Responses Selected:

Communication

Critical Thinking

Personal & Social Responsibility

### B. Learning Outcomes

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Gain a basic understanding of the Navajo sound system, including the sounds of the alphabet: vowel, consonants, diphthongs, high/low tones, nasal mark, and glottal stop. 2. Obtain and utilize Navajo words and phrases through demonstration of the written and spoken language. 3. Demonstrate the ability to use, combine, and integrate basic grammatical structures into meaningful sentences, including subjects, objects, and verbs. 4. Hold conversations concerning everyday situations with an elementary degree of fluency. 5. Understand and utilize both formal and informal Navajo language, such as ceremonial, classroom, home, and professional settings. 6. Develop an understanding and appreciation of Navajo, including values, traditions, works of art, and individual perspectives on evolving cultures. 7. Utilize critical thinking skills to make thoughtful cross-cultural comparisons and connections among beliefs, social interactions, and cultural practices.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

This course enables students to converse with the instructor in face-to-face interviews; speak to other members of the class; answer questions from students; and provide oral reports that indicate conversational skill levels at beginning, moderate, partial fluency, and full fluency. Before communication skills are studied in earnest, time and effort on learning the basic skills in the sound system and writing are conducted in class and homework assignments. The issues of diacritics are important enough to warrant intense practice in pronunciation and reading. The natural flow of speech will be practiced and reinforced until there is adequate speaking base to learn further communication skills. The preliminary skills will then lead naturally to the study of the grammar of the Navajo language. And that is where the following discussion will take place. Students will learn to correctly speak and write in the normally accepted grammatical, sentential structures like TIME + LOCATION + SUBJECT + OBJECT + INDIRECT OBJECT + VERB. This is the correct order of the parts of speech. They will also learn noun phrases, adverbial phrases, post-positional phrases, relative clauses and the correct placement of adjectives, adverbs, particles, and enclitics in sentence structure. The students will be expected to keep any utterance in the correct sentence structures, whether the sentences are short or long/complex. Students will undergo drills and speaking and writing exercises to develop comprehension. Lectures about the different phases of grammar will be conducted and necessary quiz or exam at the end of each section. Upon completion of the course, the student will be able to demonstrate moderate fluency in conversation.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

All aspects of learning the Navajo language involve critical thinking. Students enter into a wholly new world, with new sounds, grammar, and uses for listening and speaking. They learn a new sound system. They learn minimal pairs in the new sound system. They begin to unpack new and complex grammatical structures that are very different from anything they already know. They analyze the new language. It might be a simple noun, or a verb structure. They take those things apart and learn to use them. Students learn to alternate third and fourth person verb forms based on appropriate use of the language. Students will solve complex 3rd person and 4th person subjects in oral discourse and indicate skill levels of fluency at beginning, moderate, and superior levels in controlled conversation, written exams, and face-to-face evaluations. They learn how use of the different verb forms can communicate respect. All of this is in the service of reversing Navajo language shift. What could be more critical than that.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

NA

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses **2** of the components of personal & social responsibility. 200 – 300 words.*

Language, of course, especially Navajo, cannot and should not be taught in isolation from its culture and the Navajo world. The language is replete with social and cultural semantics and is so replete with social and cultural mores that it cannot and should not be taught in isolation. Nevertheless, those mores must not dominate this course. The goal and main mission of this class is on the language skills that lead to Navajo speaking, hearing, and comprehending conversations. Beyond simple pronunciation of alphabetic symbols and writing them, there are semantics and pragmatics in the study of any language. Navajo semantics dictates how passivization must be. This is similar to English active and passive sentences where the subject does an act on the object or it can be said with subject being acted upon by the object. Navajo passive speech rules are similar, but are strict. That is driven by the cultural characterization of nominals in a hierarchy where intellect beings are ranked superior and non-animates are low in this hierarchy of eight categories. Navajo particles are used to pinpoint a focus of an action or negate anything within a sentential structure. These are based on Navajo cultural and society mores. They dictate the way one must speak Navajo. Knowledge only about Navajo is not preferred. Other languages, more particularly English, must be studied too to get a solid foundation about languages.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses **3** of the components of digital literacy. 200 – 300 words.*

NA

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



**Upload Assessment**

**Completed** - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

NAV101

**Filename:** NAV101.sample-assessment.docx **Size:** 23.0 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000247**

Suzanne Balch - suzbal62@hotmail.com

NM General Education Curriculum



**Application Form**

**Completed** - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Suzanne Balch Lindsay
Title	(No response)
Phone	5755622314
Email	Suzanne.Balch@enmu.edu

### Submitting Institution

Name of HEI	ENMU Portales
Submitting Department	Anthropology

### Chief Academic Officer

Name	Jamie Laurenz
Email	jamie.laurenz@enmu.edu

### Registrar

Name	DeLynn Bargas
Email	DeLynn.Bargas@enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	ANTH
Number	125+125LP
Title	Survey of Forensic Science
Number of credits	3+1

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	ANTH
Number	125LP
Title (if applicable)	*N/A combined for NMCCNS

## New Mexico Common Course Information

Prefix	ANTH
Number	1190C
Name	Survey of Forensic Science

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

By the end of the course, students will have understood and applied the following concepts:

1. The range of forensic science specialties
2. Crime scene reconstruction
3. Types of evidence
4. Analytical methods and Interpretation of test results

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Students will understand how to and be able to collect evidence at a mock crime scene and accurately document and process the collected evidence.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Critical Thinking summarizes the major objectives of this course, in which students are given an introduction to a wide variety of techniques used for data collection in the field of forensic science. Opportunities for hands-on use of many of these techniques is provided in the laboratory portion of the course. These techniques include collecting and analyzing finger prints, tool marks, fibers, hair, DNA samples, blood residue, narcotic residues, ballistic trajectories, ballistic matching, and blood spatter patterns. Students' knowledge of class content from lectures and in-class exercises is combined with the practical skills they acquired in the laboratory portion of the course for a final crime scene analysis near the end of the semester. During this exercise, students are faced with a mock crime scene containing various types of evidence. Over the course of several class periods, students must find and collect the data available at the scene, choose the appropriate analytic techniques to analyze the data, and use their results, photographs, drawings, notes, and observations to draw conclusions about the alleged crime. Their conclusions are summarized in a detailed final report, which mirrors those used by law enforcement. The students also present their results orally to the class. Three separate crime scenes are created, and students are assigned to different components of their crime scene, so the oral presentations are unique and the final written reports are collaborative in nature. Assessment of students' critical thinking skills is based on the attached rubric Critical Thinking Rubric for ANTH 125.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative Reasoning skills are developed in several ways in this course. Statistics and probability are discussed in reference to the need for research in the field of forensic science to reach the Daubert Standard. This standard, based on the court case Daubert vs. Merrell Dow, set requirements for the admissibility of expert testimony in court. It requires the techniques upon which expert testimony is based to reach many standards, including testing of all techniques and the publication of such research in peer reviewed journals. Regarding quantitative reasoning, the Daubert Standard also requires estimates of error rates to be known for techniques that are included in expert testimony in court, thus students must understand what such rates represent and how they are calculated. Quantitative reasoning is also used when evaluating residue analysis, DNA results, infrared spectrophotometry, and scanning electron microscope images, as well as ballistic trajectories, blood spatter patterns, and other spatial evidence. Quantitative reasoning is assessed based on the accuracy and quality of the diagrams (and accompanying scales) of the mock crime scene that the students create for their final reports, how this information helps them interpret the crime scene, and their oral presentations of their conclusions. A ballistics trajectory lab earlier in the semester is also assessed to determine the students' ability to use evidence (bullet holes) to calculate the shooter's position and height of the weapon. The rubric for assessment of students' quantitative reasoning skills is based on the attached rubric Quantitative Reasoning Rubric for ANTH 125.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and Social Responsibility is extremely important in the field of forensic science. It is important that students understand that the role of the forensic scientist is to document the evidence present at a crime scene for the criminal justice system, rather than “prove” that the accused is guilty or innocent of a crime. Crime scenes must be investigated in a professional manner, while collaborating with colleagues as a team. Strict rules regarding the chain of evidence must be followed when processing evidence in a forensic lab. Evidence cannot be altered or manufactured to “prove” that the accused is guilty or innocent of a crime. The guilt or innocence of the accused is determined through the courts, the role of the forensic scientist is to provide an objective analysis of evidence from the crime scene, not to prosecute the crime. Cultural sensitivity is also necessary in the field of forensic science. In analyzing aspects of a crime scene, cultural differences must be kept in mind to help an investigator determine what might be unusual at the crime scene. In addition, it is very important to respect cultural differences during questioning of a suspect. When any of the above rules are not followed, convictions can be overturned or the wrong individual can be convicted of a crime. This Student Learning Outcome is assessed through two questions on the midterm exam regarding ethical reasoning, and an evaluation of their success in working with their teammates on their final project. The latter is rated by the instructor as part of a rubric on their report as well as a self-evaluation and reflection writing assignment completed by the students. The rubric for assessment of students’ quantitative reasoning skills is based on the attached rubric Personal and Social Responsibility Rubric for ANTH 125.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

Pending

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 22 2019



### Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### ANTH 1190C Assessment Ex (assignments)

Filename: ANTH\_1190C\_Assessment\_Ex\_assignments.pdf Size: 247.1 kB



### Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### ANTH1190C Rubrics

Filename: ANTH1190C\_Rubrics.pdf Size: 1.2 MB

## Application: 0000000153

David Smith - davsmith@nmsu.edu

NM General Education Curriculum



### Application Form

Completed - Mar 22 2019

## Application Form

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	David Smith
Title	Director of Assessment
Phone	(575) 646-7621
Email	davsmith@nmsu.edu

### Submitting Institution

Name of HEI	New Mexico State University
Submitting Department	Plant and Environmental Sciences

### Chief Academic Officer

Name	Dr. April Mason
Email	provost@nmsu.edu

## Registrar

Name	Kori Keyes
Email	krkeyes@ad.nmsu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	AGRO (and HORT, cross-listed courses)
Number	100G
Title	Introductory Plant Science
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	AGRO (HORT)
Number	1110C (1115)
Name	Introduction to Plant Science (Introductory Plant Science)

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

#### Student Learning Outcomes

1. Describe the basic structure of plants including growth and function.
2. Define photosynthesis, respiration, and translocation
3. Utilize plant taxonomy techniques to identify various plants.
4. Classify soils based on their chemical and physical properties.
5. Explain how different soil properties affect plant growth and sustainability.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

A significant emphasis is given on developing critical thinking skills in the AGRO 100G/HORT 100G course. There are several projects and activities that students are engaged in through the semester that help them developing different components of critical thinking. For instance, students in this course are required to identify a problem within the main theme of plant sciences, and then write a paper on their chosen topic/problem. Generally, students are encouraged to write on issues related to sustainability, natural resources that motivate students to think deeper about social responsibility and stewardship of natural resources and environment.

Students must submit their titles by a certain date and get it approved from the instructor to get credit. Similarly, students must submit a first draft by a deadline detailing 1) what problem they identified to write along with its importance and background justification; 2) what evidence information they acquired on various aspects of the problem; 3) how they evaluated the evidence synthesizing the information acquired; and 4) what conclusions they withdrew and how. Students receive feedback from the instructor on their first draft of the essay. Students then incorporate the edits suggested by the instructor and then submit a final draft by the due date. Students are provided a detailed rubrics each for the first draft and the final draft at the beginning of the class. There are strict guidelines and deadlines that the students must follow to earn the full credits for their paper.

Students are provided training at the NMSU library to familiarize them with various resources and how to access those resources conduct their research and acquire evidence to support their conclusions. They are encouraged to follow an approach to writing the paper where they identify and present the problem,

conduct research and acquire evidence, present multiple viewpoints on the problem, and provide the best solution or viewpoint based upon their analysis of the evidence.

In addition, students conduct several detailed experiments related to plant growth processes where they test a hypothesis by going through various steps of the scientific method that help develop their critical thinking skills. For instance, students identify a problem, conduct an experiment to collect data and then analyze the data to draw conclusion based on their observations. In total, students conduct 13 labs during the semester complementing various topics related to plant growth and soil management covered in the lectures.

Students are also engaged in a comprehensive project titled, Know Your Plant Project (KVP) where they are divided into groups and each group assigned with a mystery plant product or plant. Each group have to do find out what the source plant is and then conduct detailed research on various aspects of the plant such as its cultural practices, place of origin, major producer countries and fun facts. Each group then make a PowerPoint presentation in the class and answer questions. A detailed rubrics is provided to the students that emphasizes a shared responsibility and teamwork. Students are evaluated as group as well as individually for their performance. The final grade from the project also involve a confidential peer-evaluation from within each group. Students are also asked to provide multiple choice questions that are then given as an open book quiz to the class to encourage class participation and attendance.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students of AGRO IO0G/HORT 100G are exposed to quantitative information on various topic and given questions on quizzes and exams where they have to provide answers analyzing the quantitative arguments. Several labs and experiments involve collecting data on various plant growth parameters and then preparing graphs and analyze the information and draw conclusions. For instance, one of the labs focusing on studying water use and loss by plants through transpiration involves measuring amount of water lost by the plants at regular interval of time under various conditions created in the lab. Students then measure surface area of the leaf and then use equations to calculate water loss per surface area. Based on compilation analysis of data from different treatments, students draw conclusions about what conditions caused the most loss of water from plants. Similarly students learn about quantitative reasoning skills through other exercises that involve acquiring and analyzing quantitative information through the semester.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Several projects and activities of AGRO 100G/HORT 100G involve teaching personal and social responsibility skills. For instance, students are divided into groups for Know Your Plant Project as discussed above. Many plants assigned in the project are those grown in other countries and bring a global perspective in the class. The project is designed in such a way that the students learn working in a team and sharing responsibility. They have to coordinate to meet outside the class and divide the task and finally present their work as a team. At the end of the semester, students are graded by their peers as well for their performance on the group project. Similarly, students collaborate while working in groups during their lab projects. Students are also made aware of plagiarism policy of the university and taught about ethical learning. In another experiential learning project, student groups are provided small plots that they use to plant and grow different vegetables at Fabian Garcia Plant Science Center. Students learn about growing plants while learning about conserving natural resources and promoting sustainability. They are involved from planting to harvest, taking care of the plants through the semester. This activity provides them an opportunity to think in a holistic manner. Finally, students are also given tours to farms exposing them to real world enhancing their knowledge about civic issues such as water scarcity, and chemical vs. organic agriculture.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

Not on File Yet

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## AGRO 100G HORT 100G NM Course Certification Sample Assessment

Filename: AGRO\_100G\_HORT\_100G\_NM\_Course\_Certific\_8miyGBc.pdf Size: 215.6 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000053

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



## Application Form

Completed - Mar 13 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning

3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
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### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
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### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

**Institutional Course Information**

Prefix	BIOL
Number	1130
Title	Introductory Anatomy and Physiology
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

No

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	BIOL
Number	1130L
Title (if applicable)	Introductory Anatomy and Physiology Lab

**New Mexico Common Course Information**

Prefix	BIOL
Number	1130
Name	Introductory Anatomy and Physiology Lab

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Define and explain anatomy and physiology.
2. Use anatomic directional, regional, and sectional terminology related to the human body.
3. Explain and describe the basic chemical principals of the human body including the structure and function of carbohydrates, lipids, proteins and nucleic acids.
4. Develop a basic familiarity with cells and cell organelles that include cell division, DNA replication, and protein synthesis.
5. Describe the structure and function of the major tissues in the human body.
6. Identify and describe the basic anatomical features of the integumentary, skeletal, muscle, nervous, endocrine, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive systems.
7. Describe the basic physiological roles of the integumentary, skeletal, muscle, nervous, endocrine, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive systems.
8. Apply and describe the principals of homeostasis in the human body.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

Critical thinking skills are assessed in the laboratory with experiments throughout the semester. Students complete a unit on heart function; setting up the problem includes students working together as a team to learn proper technique for listening to individual heart valve sounds with a stethoscope, technique for taking a patient's pulse, and blood pressure reading with a blood pressure cuff on a lab partner. Students also learn normal values for these measurements. Then, students use the measurements as evidence to analyze the health status of the patient. Some measurements require calculations of formulae to observe the various effects of several factors on blood pressure and how changes in BP affect heart output. Using tables of normal values, students learn to evaluate and use medical reasoning to come to a conclusion about the health status of their patient. Also included are abnormal values and their diagnostic value for diseases and conditions harmful to the patient. Thus, critical thinking skills are used in learning how to perform these measurements, acquiring the data, analyze the data, and using calculations for results to evaluate patient health. ---See attachment: Heart Sounds, Pulse, and Blood Pressure"

As students explore cells of other body systems, they use the same critical thinking methods to compare/contrast structure and function of various types of cells in the body, transport of molecules into/out of cells, the process of cell division, and predict inheritance of genetic traits.

### **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models**

*In this box, provide a narrative that explains how the proposed course addresses all of the components*

*of quantitative reasoning. 200 – 300 words.*

Examples of quantitative reasoning in this course are: representation/analysis of heredity and cell division, identity/frequency of types of blood cells, measuring and evaluation of blood pressure and pulse in a patient for diagnosis, evaluation of heart rate and output, evaluation of kidney function and output, and other system evaluations.

1. Students communicate, collaborate, and analyze specific characteristics used to identify different types of blood cells on microscope slides. After learning how to distinguish the cells apart, students form teams, count 100 white blood cells (leukocytes), express their results as a percentage, and estimate the relative normal frequency of each type of cell. Quantitative analysis of numbers of each type cells is applied to assist diagnosis a patient's condition because changing numbers of certain cell types indicate body immune response to certain pathogens (virus, bacteria, allergic reaction, etc.). The students are guided through examples of diseases/conditions which show varying numbers of certain cell types. This test and others in the attached chart are standard tests done in the medical laboratory on patient samples. ---See attachment: "Chart of Blood Tests"

2. Quantitative skills are also essential in the Cell Division unit. Students collaborate and analyze specific characters to identify the five-phases of mitosis on microscope slides. Then students form teams, count 100 cells, express the five-phases as a percentage, then use the percentages to estimate the relative amount of time that a cell spends in each phase. Application involves analyzing mistakes in cell division, effects on cell function, and how mistakes can affect different cell types (both in body organ cells and in eggs/sperm) ---See attachment: "Cell Division: Mitosis and Cytokinesis".

3. Students complete a unit on heart function; it includes heart sounds, taking pulse and blood pressure readings on a patient. Also included are normal and abnormal values and their diagnostic value. Students learn how to perform these measurements and analyze the data. Some measurements require using data calculation in formulae to observe the various effects of several factors on blood pressure. Evaluation of patient health is then possible using normal and abnormal values to assess and apply to human health. ---See attachment: Heart Sounds, Pulse, and Blood Pressure"

4. A heredity unit involves crossing different individuals and expressing the probability of specific types of offspring as mathematical ratios and graphs. Students use genetic symbols to represent / communicate the genetic make-up of individuals and the types of eggs/sperm they can pass to offspring. Students perform a specified mating, analyze the possible combinations (data) of offspring, and use a probability ratio to show the occurrence of specific gene make-up and physical appearance of a trait in the offspring. Students use these probabilities and reasoning behind the interaction of genes in interpretation and



application of quantitative possibilities to understand how a parent passes diseases to their offspring; in addition, knowing risk of inheritance allows discussion / critique about the possibly choosing to not risk passing a devastating disease to offspring.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Most students in the course are in the Medical Assistant program, so they must develop essential skills for collaboration, teamwork, value systems; and understand ethical reasoning. Throughout the lab course, students are assessed each lab on participation, interactive collaboration, teamwork, and ethical reasoning within their group. ---See Attachment: "BIOL 1130L Rubric for Attendance / Interactive Participation / Ethics"

Since the rubric is used every lab, and some class assignments/discussions, this extends throughout the semester.

The heredity unit is one example. As students work as a team to learn to perform genetic crosses, learning the relationships / interactions of the gene combinations, class discussion is guided by the Instructor to team collaboration to inheritance of diseases (Huntington's, sickle cell anemia, Down's, etc.). Students also see a film

("9 Months That Made You") which shows one trimester of development in a human fetus; the film examines 6-7 cases of normal genetic / developmental mistakes. This also brings in team questions and discussions cell division mistakes / mutations, etc. On the next exam students are asked to select a case, express why it caught their attention, elaborate on the situation, including ethical values of the patient confidentiality and respect. The rubric guides assessment on interaction collaboration, teamwork and ethical reasoning of inheritance/passing on disease-causing alleles.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



**Upload Assessment**

**Completed** - Mar 12 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

biol 1130 assignments

**Filename:** biol\_1130\_assignments.pdf **Size:** 23.1 MB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000214**

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Miguel Vicens
Title	Associate Dean School of Business
Phone	575-538-6403
Email	miguel.vicens@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	ECON
Number	200
Title	Basic Economics: Private Enterprise
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ECON
Number	1110
Name	Survey of Economics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Follows SLO's for ECON 1110

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Upon successful completion of the course, the student will be able to 1. Gain and demonstrate a contextual understanding of economic terms and concepts. 2. Recognize and analyze common economic issues, which relate to individual markets and the aggregate economy. 3. Learn basic economic principles that influence global trading and challenges relating to globalization. 4. Outline the implications of various economic policies on individuals and on economies. 5. Demonstrate ability to use diagrams and graphs to explain economic principles, policies and their applications. 6. Appreciate and understand how individual decisions and actions, as a member of society, affect economies locally, nationally and internationally. 7. Explain the roles of governments in influencing buyer and seller behavior in the market and how government failure occurs when intervention fails to improve or actually worsens economic outcomes.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will develop communication skills discussing real life economic examples in the private industry. The class will include debates, essays and exercises addressing current products, demand and supply, prices and other areas of the private enterprise. The course prepare students to communicate the strategies to analyze government and private industry issues in the markets and the aggregate economy.

The course require the students to develop the ideas coherently and articulate their perspectives on current situations. The educational discourse based on facts, research and personal experiences. Students will also demonstrate the ability to use diagrams and graphs to explain economic principles. Student will solve problems and submit written assignments using economic models.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will express their ideas through debating their individual perspectives in the implications of the various economic policies on individuals and on economies. The students will demonstrate the ability to think critically while proposing solutions to current real life policies and its origins on economic principles.

Students will have to formulate arguments, develop ideas, differentiate between economic situations and assess the economic models. Student will solve problems and submit written assignments using economic models.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The students will develop personal and social responsibility in the local and global environment by debating economic principles of the private enterprise in the classroom setting. The course require the students to articulate and develop the ideas and their perspectives on current situations.

The educational discourse will be based on facts, research and personal experiences. Student will solve problems and submit written assignments using economic models.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CJHkV5-rKUrpNEBVUkNjaJPSJAaorjVJhNqiW?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

ECON 200 Assessment 1

Filename: ECON\_200\_Assessment\_1.pdf Size: 65.3 kB

Upload Rubric





Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Syllabus ECON 200 Basic Economics Private Enterprise

Filename: Syllabus\_ECON\_200\_Basic\_Economics\_Pri\_AIQgrv8.docx Size: 97.6 kB

### Application: 0000000225

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



### Application Form

Completed - Mar 22 2019

## Application Form

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## Essential Skills

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel Peterman
Title	Full Time English Faculty
Phone	(505) 224-4000 ext. 53007
Email	dpeterman@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	ENGL
Number	1410
Title	Introduction to Literature
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	1410
Name	Introduction to Literature

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Identify, define, and understand basic literary conventions and themes in fiction, poetry and drama.
2. Write reasonable, well-supported analyses of literature that ethically integrate evidence from texts

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

**C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The attached assignment is an example of the ways in which this class meets the requirements for Critical Thinking as follows:

- Problem Setting – Students are required to select a story from either the textbook or a story by an author whose work appears in the textbook and critically analyze it for its treatment of a specific theme. In order to do so, they must of course closely read the story but also apply the analytical frameworks which they've focused on in the class in order to identify a theme and then explain how it's developed in the text. This is a task that will be used in varying ways throughout the semester.
- Evidence Acquisition – In order to analyze the theme, students must acquire evidence from the story itself, such as the various literary techniques used by the author and apply principles of literature they've covered in the class. These various principles will be delivered both in readings and class lectures and lessons. As a literature class, these basic principles will be applied a number of ways in both this assignment and later tasks.
- Evidence Evaluation – Based on their knowledge and understanding of various literary techniques and devices, students will critically analyze a work of short fiction for a theme through the use of close reading of the text, application of the conventions of literature, and do so through a carefully crafted essay. This helps reinforce valuable skills such as close, critical reading and an understanding of genre conventions.
- Reasoning/Conclusion – While multiple interpretations are possible with any work of literature, the task of this assignment, and of the class itself, is to equip students with the ability to reason through creative written works and to draw conclusions about what they express on a deeper level than simply enjoying a plot or the sound of the language. By focusing on a single theme in this assignment, students will strengthen their ability to build arguments and focus on a main point in a piece of writing.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The attached assignment is an example of the ways in which this class meets the requirements for Personal and Social Responsibility as follows:

- Intercultural reasoning and intercultural competence – As an introduction to literature, ENGL 1410 asks students to read and write about literature written by authors from different times, places, cultural backgrounds, belief systems, etc. When students are choosing an author and story for this assignment, and other assignments in this class, they will likely be focusing on a work of literature written outside of their own cultural context, thus having the opportunity to further develop their intercultural reasoning and competence. This is accomplished both through dealing with the subject matter of the various works of literature as well as through the use of language and expression and how these reflect and convey various aspects of culture.
- Civic discourse, civic knowledge and engagement – local and global – As an important method of human expression, literature is a form of discourse between readers and writers. Furthermore, the reading of literature is often shaped by local and global understandings while the writing of literature is often a response to events within various communities. Literary techniques such as symbolism and allusion are based in shared cultural understandings of what kinds of works or images people value. More importantly, as noted above, since literature exists within an intercultural space, the level of civic knowledge and engagement is heightened as students are assigned a variety of works with which they must engage both on a personal level but also through class discussions. An assignment like this is reflective of how students engage with various written works in this class and how they must engage with this as a form of civic discourse while also drawing upon a larger civic knowledge.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

The attached assignment is an example of the ways in which this class meets the requirements for Information and Digital Literacy as follows:

- **Authority and Value of Information** – One of the ways in which a literature class, specifically ENGL 1410, addresses the authority and value of information is how it simultaneously presents students with knowledge of the various components, techniques, and devices used in different genres of literature while also equipping them to draw their own conclusions about the significance of various writings, authors, and movements within literature while also encouraging them to challenge and push against these boundaries through an ever expanding canon of literature. As this work is done, in the attached assignment for example, students will focus on traditional techniques employed in literature in order to present their analyses and arguments in academically appropriate ways through the use of close reading, reasoning, and adherence to the conventions of academic writing. This requirement, while allowing for a reexamination of what counts as literature, helps ensure that students are dealing with works appropriate for the level at which they're learning and writing.
- **Information Structure** – While completing this assignment and the various other assignments for this course, students must select appropriate ways in which to present their information, which types of information to use to develop their ideas, and to properly organize and structure their writing in the conventions of academic essay writing. Specifically, this assignment asks students to presuppose an audience of literary scholars and to make choices in how they present their information that are appropriate for this audience.
- **Research as Inquiry** – This assignment is emblematic of this course in that students are not given an interpretation ahead of time nor are they asked to take certain point of view in their analysis, but instead they must follow an iterative process in which they closely read a work and develop questions regarding meaning and significance which they then answer through close reading, application of course concepts, and the accumulation of outside materials to provide answers to these self-generated questions.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



**Upload Assessment**

**Completed** - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**ENGL 1410 Assignment**

**Filename:** ENGL\_1410\_Assignment.docx **Size:** 14.8 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000130**

A. BAILEY Pagels - pagelsa@wnmu.edu  
NM General Education Curriculum



**Application Form**

**Completed** - Mar 22 2019

## Application Form

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6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Lynn Haugen
Title	Professor Natural Sciences
Phone	575.538.6202
Email	lhau@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	BIOL
Number	1140
Title	Biology for Health Sciences
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	BIOL
Number	1140L
Title (if applicable)	Biology for Health Sciences Lab, 1 credit

## New Mexico Common Course Information

Prefix	BIOL
Number	1140
Name	Biology for Health Science

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for BIOL 1140 and BIOL 1140L Biology for Health Sciences Lecture and Lab

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

BIOL 1140 (lecture)

1. Explain the central ideas and process of biology, including the organization of life, evolution, selection and adaptation, and application of the scientific method.
2. Explain the role of science and critical thinking in society.
3. Apply basic chemistry to the biology of cells.

4. Describe the structures and functions associated with eukaryotic cells and compare/contrast to prokaryotic cells.
5. Describe the components and mechanisms of cellular metabolism.
6. Describe the DNA structure and replication, including mutation and DNA repair.
7. Explain the central dogma of genetic flow; explain gene expression and how it's regulated.
8. Explain the relationships between sexual reproduction, genetic diversity and inheritance.
9. Describe and contrast the processes of mitosis and meiosis.
10. Describe patterns of inheritance and human genetic disorders.
11. Explain homeostasis and identify major tissues, organs and organ systems and their function.

#### BIOL 1140L (lab)

1. Explain the scientific method and use it develop and test a hypothesis.
2. Analyze and interpret graphical data.
3. Demonstrate use of laboratory equipment to perform scientific measurements.
4. Demonstrate skills used in microscopy.
5. Distinguish between eukaryotic and prokaryotic cells, including their structures and functions.
6. Describe selective permeability of membranes and movement of water and molecules across membranes by diffusion and osmosis.
7. Describe the structure and function of enzymes.

8. Describe the structure of DNA and the flow of genetic material in a cell from DNA to RNA to proteins.
9. Describe the processes of mitosis and meiosis.
10. Predict the inheritance of genetic traits.

#### ALAS General Education Outcomes: Big Questions

1. What is truth?
2. What is justice?
3. What is it to be human?
4. What is a good life?

#### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting.

In this course, students are introduced to the scientific method and shown how knowledge is obtained by posing questions, developing hypotheses, and collecting and analyzing data in an attempt to falsify hypotheses (i.e., reject or show the hypotheses to be incorrect). Hypotheses can never be proven “true” beyond all doubt, but the confidence that we have in the truth of a hypothesis (i.e., its correctness) is related to the number and severity of the tests that have failed to falsify it. In lecture the critical skills associated with this scientific methodology are introduced and discussed, and in the laboratory, students formulate hypotheses, make predictions, and perform experiments to see if the hypotheses are rejected or corroborated by their results. For example, in lecture students learn about protein structure and denaturation. In the associated laboratory they apply that knowledge to explore how the cellular environment affects the rate of enzyme activity. They learn to clearly state the expected relationship between the independent and dependent variable in their hypothesis. They then formulate a null hypothesis to be tested with respect to relevant variables.

#### Evidence Acquisition.

Throughout the course, students are presented with problems to solve. Often they are asked to formulate hypotheses and to design experiments to test them. They collect data to test their hypotheses. Using the example above, students formulate hypotheses concerning the effect certain variables have on enzyme activity (e.g., temperature, pH, salt concentration). They then test their hypotheses by exposing an enzyme (catalase, which breaks down hydrogen peroxide) to various treatments. Enzyme activity is quantified by measuring the amount of oxygen produced (both quantitatively and qualitatively) when hydrogen peroxide is added to the enzymes subjected to the various treatments.

#### Evidence Evaluation.

When conducting laboratory experiments students collect and graph their data, and then interpret their results. Through this process they learn how evidence for or against a hypothesis is obtained and, importantly, how hypotheses are often rejected but modified with the knowledge obtained through additional experimentation. They learn of extraneous variables and how to control for them. In hypothesis testing, emphasis is on attempting to reject (i.e., falsify) rather than corroborate hypotheses, because one well-designed experiment or set of observations can, potentially, refute the hypothesis under test, whereas no matter how many times a hypothesis has been corroborated, the next test may falsify it.

Reasoning and Conclusion.

In both lecture and laboratory activities, students are required to think critically about the interpretation of data and the conclusions to be drawn from them. In some instances, students are required to draw conclusions based on data collected in their experiments; in other cases they are required to discuss the conclusions of experiments presented to them in lectures. They learn to understand that much of the knowledge in the sciences is based on sound experimental procedures, but that they should know the source of the evidence presented (including the funding source of the research) and have some basic scientific knowledge so that they can reasonably question the conclusions.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information.

In this course students are required to use methods of quantitative analysis to calculate values, create graphical representations of data, interpret information presented in graphs and tables, evaluate quantitative information, and draw valid conclusions. For example, in this course students read food labels and learn how to calculate calories of foods from grams of carbohydrates, fats, and protein. In the laboratory they solve problems that require them to calculate their own energy expenditure and energy consumption. In this course they are also introduced to the mathematical concept of probability and how it can be used to solve genetic problems, many examples of which are given in the associated laboratory.

Analysis of Quantitative Arguments.

Students are required to interpret various kinds of graphical information (histograms, line graphs, scatter plots, etc.) and are required to draw conclusions from the data presented. In lecture we discuss the issue of sample size, and the reliability of conclusions based on various sample sizes. Other potential sources

of bias are considered, such as results based on research funded by entities that have a vested interest in the outcome of the research (e.g., medical trials funded by pharmaceutical companies).

#### Application of Quantitative Models.

Throughout this course students are introduced to various methods of quantitative analysis. They are required to calculate values, evaluate the validity of data sets, and to derive conclusions from the analysis of numerical data. These quantitative skills are applicable to real-world situations. For example, students learn to use nutrition information to calculate the number of calories they consume per day, and what proportion of those calories are in the form of carbohydrates, fats, and protein. In addition, they learn how to calculate their daily energy expenditure, assuming various activities. This allows them to compare energy expended versus energy consumed. These calculations have obvious implications for the physical well-being of our students. In learning the terminology and how to solve genetics problems, students gain a better understanding of their own genetic make-up. In addition, they will be better prepared to understand current advances in genetics (e.g., CRISPR) and will have a more thorough understanding of information obtained about their own genetics through companies such as 23andMe.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

#### Sustainability and the Natural and Human Worlds

In this course students learn the fundamental properties of life common to all organisms, including our species, and they come to appreciate the fact that the resources necessary to sustain life are finite. Because this course covers the basics of chemistry and biological molecules, students come to appreciate the chemical basis of living systems, and why clean water and a balanced diet free from pesticides are important for a healthy life. Through an understanding of human biology, students learn of the impact that humans are having on the environment and how that impact can affect the quality of their lives. As an example, while learning about the basics of chemistry and unstable molecules, we



discuss the harmful mutagenic effects of ozone on human health, when inhaled, but also the benefits of the ozone layer in the upper atmosphere, which blocks much of the sun's deleterious radiation. Understanding the instability of ozone as a reactive molecule allows students to develop a deeper understanding of the importance of the ozone layer, and how humans have the potential to destroy it further or to help it to recover, to the benefit of all organisms.

## Ethical Reasoning

Acquiring the knowledge and understanding that comes with education allows students to become better-informed citizens, capable of interpreting and evaluating the information to which they are constantly exposed. This, in turn, allows them to make well-reasoned decisions concerning the important issues of our time. In this course students learn the fundamental basics of genetics, which then allows them to participate in discussions of such controversial topics as the usefulness of genetic testing, the results of which may, in some cases, prove to be beneficial, but which may also have unethical consequences. In discussing DNA and heredity, we consider the ethics of so-called designer babies and the ramifications that such genetic manipulations may have for the evolution of our species. Because this course covers cell biology and heredity, many of the hypothesized causes of aging are discussed, especially those at the cellular level. Such knowledge prepares students to better understand the potential "cures" for aging currently under development. Students also learn how antibiotics work and how they are often misused. They come to understand that the promiscuous use of antibiotics has the potential to affect us all, as those medications select for the evolution of antibiotic-resistant bacterial strains. The course also addresses the issue of vaccines – what they are, how they are used, and how important vaccinations are, not only for those receiving them, but also for those whose immune systems are compromised. By discussing these and other controversial biological subjects, students are exposed to a variety of perspectives, some of which may deepen their understanding of the issues, and allow them to better appreciate their importance, and perhaps cause them to re-evaluate their positions with respect to these vexing problems.

## **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CJHkV5-rKUrPnEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



**Upload Assessment**

**Completed** - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**3-WNMU BIOL 1140-1140L - Asse Ex -**

**Filename:** 3-WNMU\_\_BIOL\_1140-1140L\_-\_Asse\_Ex\_.pdf **Size:** 52.5 kB



**Upload Rubric**

**Completed** - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**2- BIOL 1140-1140L Bio Health Sciences & lab -Syllabus -WNMU**

**Filename:** 2-\_BIOL\_1140-1140L\_Bio\_Health\_Sciences\_4B09ayl.pdf **Size:** 132.7 kB

**Application: 0000000050**

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 13 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
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Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
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### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	BIOL
Number	1140
Title	Biology for Health Sciences
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	BIOL
Number	1140L
Title (if applicable)	Biology for Health Sciences Lab

## New Mexico Common Course Information

Prefix	BIOL
Number	1140
Name	Biology for Health Sciences

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the central ideas and process of biology, including the organization of life, evolution, selection and adaptation, and application of the scientific method.
2. Explain the role of science and critical thinking in society.
3. Apply basic chemistry to the biology of cells
4. Describe the structures and functions associated with eukaryotic cells and compare/contrast to prokaryotic cells
5. Describe the components and mechanisms of cellular metabolism
6. Describe the DNA structure and replication, including mutation and DNA repair.
7. Explain the central dogma of genetic flow; explain gene expression and how it's regulated
8. Explain the relationships between sexual reproduction, genetic diversity and inheritance
9. Describe and contrast the processes of mitosis and meiosis
10. Describe patterns of inheritance and human genetic disorders
11. Explain homeostasis and identify major tissues, organs and organ systems and their function.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical thinking skills are assessed in the laboratory with experiments throughout the semester. An early experiment involves exploring the water properties of cohesive/adhesive forces due to hydrogen bonding. The students work through the experiment/problem by exploring why two wet microscope slides stick together so tightly they cannot pull them apart, and secondly, why water moves upward into a small tube held at the surface of water and defies downward gravitational pull. As the students do the experiment, they acquire evidence that water behaves uniquely, and are asked written questions requiring them to evaluate the properties of water due to the force of hydrogen bonding of water molecules. Next, students are asked to evaluate the water properties from the experiment to explain how evaporation of water out of the leaves of a 30-foot tree assists in movement of water molecules upward through the tree, and, how this moves water into roots from soil. The evidence/evaluation of water properties, leads students to reason/conclude that these forces are strong enough to “pull” water molecules upward as water evaporates out of leaves.

Later as students explore cells they use the same critical thinking to compare/contrast plant vs. animal cells, transport of molecules into/out of cells, the process of cell division, and predict inheritance of genetic traits.

---See attachment “Activity #1: “Properties of Water” and “Movement of Water up Xylem”.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

The course units on heredity and cell division / mitosis are examples of quantitative reasoning.

1. The heredity unit involves crossing different individuals and expressing the probability of specific types of offspring as mathematical ratios and graphs. Students use genetic symbols to represent/communicate the genetic make-up of individuals and the types of eggs/sperm they can pass to offspring. Students perform a specified mating, analyze the possible combinations (data) of offspring, and use a probability ratio to show the occurrence of specific gene make-up and physical appearance of a trait in the offspring. Students use these probabilities and reasoning behind the interaction of genes in interpretation and application of quantitative possibilities to understand how a parent passes diseases to their offspring; in addition, knowing risk of inheritance allows discussion/critique about the possibly choosing to not risk passing a devastating disease to offspring. In addition, other course units, such as cell division, support quantitative reasoning, so students get addition exposure to this important skill.

---See attachment “Activity # 3: How to Solve Genetics Problems”.

2. Mitosis unit also requires quantitative reasoning: Students collaborate and analyze characters to identify the five- phases of mitosis on microscope slides. Then students form teams, count 100 cells, express the five-phases as a percentage, and estimate the relative amount of time that a cell spends in each phase.

---See attachment “Activity # 5: Onion Root Tip - Mitosis”.

3. Additional examples involving quantitative reasoning skills include:  
bonding atoms to form molecules, effects of enzymes on energy during chemical reactions, aerobic/anaerobic metabolism in cells.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Most students in the course are pre-healthcare, so they must develop essential skills for collaboration, teamwork, and value systems; and understand ethical reasoning. Throughout the lab course, students are assessed each lab on participation, interactive collaboration, teamwork, and ethical reasoning within their group.

---See Attachment: "BIOL 1140L Rubric for Attendance / Interactive Participation")

The heredity unit is one example. As students perform genetic crosses, learning the relationships/interaction of the gene combinations, class discussion is guided by the Instructor to team collaboration to inheritance of diseases (Huntington's, sickle cell anemia, Down's, etc.). Students also see a film ("9 Months That Made You") which shows first trimester development of a human; the film examines 6-7 cases of normal and of genetic / developmental mistakes. This also brings in team questions and discussions cell division mistakes / mutations, etc. On the next exam students are asked to select a case, express why it caught their attention, elaborate on the situation, including ethical values. The rubric guides assessment.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 12 2019



Upload Assessment

Completed - Mar 12 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## biol 1140 assignment

Filename: biol\_1140\_assignment.pdf Size: 2.3 MB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000179

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
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### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	HI
Number	123
Title	United States History from 1877
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	HIST
Number	1120
Name	United States History II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will be able to EXPLAIN in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries for the history of the United States from the reconstruction to the present. Bloom Taxonomy's Cognitive Process: REMEMBER AND UNDERSTAND
2. Students will DISTINGUISH between primary and secondary sources, IDENTIFY and EVALUATE evidence and EMPATHIZE with people in their historical context. Bloom Taxonomy's Cognitive Process: ANALYZE, REMEMBER, EVALUATE, CREATE
3. Students will SUMMARIZE and APPRAISE different historical interpretations and evidence in order to CONSTRUCT past events. Bloom Taxonomy's Cognitive Process: UNDERSTAND, EVALUATE, APPLY
4. Students will IDENTIFY historical arguments in a variety of sources and EXPLAIN how they were constructed, EVALUATING credibility, perspective, and relevance. Bloom Taxonomy's Cognitive Process: REMEMBER, UNDERSTAND, EVALUATE
5. Students will CREATE well-supported historical arguments and narratives that demonstrate an awareness of audience. Bloom Taxonomy's Cognitive Process: CREATE, APPLY
6. Students will APPLY historical knowledge and historical thinking "in order to infer what drives and motivates human behavior in both past and present. "Bloom Taxonomy's Cognitive Process: APPLY, ANALYZE

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students pose questions about the goals and purposes of studying the past in the context of specific historical events.

Evidence Evaluation:

Instructors provide instruction on critical thinking skills related to reading and writing throughout the course. Students analyze readings from primary and secondary sources by examining the evidence and reasons used by authors while also learning to recognize bias, motivations, historical influence, and interpretation, and how information or lack of information affects beliefs and written records.

Reasoning/Conclusion:

Learners engage in conversation with each other about the issues raised in the readings while the instructor facilitates conversation via live conversation and/or online discussion boards, such as Perusall. Students practice using support and evidence while addressing opposing views or problematic statements with unverifiable interpretations. Students further practice critical thinking by commenting on each other's assessments of the readings and topics being discussed. Instructors assess the quality of critical thinking with a rubric.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global

Sustainability and the natural and human worlds: Students are assigned a historical person to embody through a specific event or negotiation within history. Students read primary and secondary sources to engage in-class debates, discussions, and negotiations as their assigned person. Students work together in collaborative groups/factions towards common goals, as well as to achieve personal objectives. Students will research the various topics of the scenario to construct arguments, rebuttal potential opposition, and understand the historical background.

Ethical reasoning: Students examine the role of differing ethical beliefs in the context of American history: How are ethical beliefs from the past in dialogue with ethics today? How can knowledge of the past inform ethical decision making today? Is knowledge of the past necessary to engage in thoughtful ethical analysis. Students consider these and other questions in the context of specific historical contexts.

Collaboration skills, teamwork and value systems: Collaboratively, students deliver speeches, write pamphlets and newspaper articles, write treaties and laws as if they were people from the past, and work together to understand historical points of view by “walking a mile” in someone else’s shoes. Basically, students reenact the past through role playing to arrive at firsthand knowledge of the value systems at work in the past. Student participation, teamwork, and thinking is evaluated with a rubric.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Instructors use Library Resources to educate Students about the Library, its resources, and the benefits of using the Library to conduct research over generic search engines such as Google or Chrome. Standards and methods of formatting are presented and in multiple assignments students are required to gather and present their research according to those standards. Topics such as credibility, copyright, intellectual property and fair use are presented and discussed in preparation for the research assignments.

Digital Literacy:

As part of the departmental curriculum, instructors assign a Google Map project where students are required to create a collaborative digital footprint of historical information. Students search online and library databases for their own topics that meet the current week's scheduled topics and create a concise, short encyclopedia entry on the course's Google Map for the rest of the class to read, edit, and study from. This facilitates education and discussion on the use of technology to create and learn history and proper citations and source evaluations. In this class students must find, use, and cite sources in MLA or APA format. Instructors assess information and digital literacy in the context of relying information for other students to utilize, proper use of technology and sources, and use a rubric to assess student learning.

Information Structure: Students produce projects that adhere to standard organization of introduction with a thesis, body with clear topic sentences, and conclusion. Students integrate and synthesize primary and secondary sources into their work. History faculty work with faculty in other disciplines to ensure that campus wide communication standards for organization and clarity are upheld/

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided evidence to help understand the past and how it affects the present.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)



**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



**Upload Assessment**

**Completed** - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**HI 123 Sample Assignment**

**Filename:** HI\_123\_Sample\_Assignment.docx **Size:** 18.5 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000234**

Annemarie Oldfield - annemarie.oldfield@roswell.enmu.edu  
NM General Education Curriculum



**Application Form**

**Completed** - Mar 22 2019

## Application Form

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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### Contact Information

Name	Robin Billington
Title	Humanities Dept. Director
Phone	575-624-7252
Email	robin.billington@roswell.enmu.edu

### Submitting Institution

Name of HEI	Eastern New Mexico University-Roswell
Submitting Department	Humanities

### Chief Academic Officer

Name	Dr. Ken Maguire
Email	ken.maguire@roswell.enmu.edu

### Registrar

Name	Dr. Linda Neel
Email	linda.neel@roswell.enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	ART
Number	232
Title	Beginning Ceramics II
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	na
Number	na
Title (if applicable)	na

## New Mexico Common Course Information

Prefix	ARTS
Number	2310
Name	Ceramics II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1.Demonstrate intermediate techniques in wheel throwing, hand building, glazing, and kiln firing. 2.Prove through class work an intermediate understanding of both the nomenclature and the use of a variety of ceramics equipment. 3.Be able to utilize principles of design, and aesthetic judgment to create and analyze a body of work consisting of both functional and sculptural ceramic objects. 4.Use a greater familiarity with historical and contemporary ceramic sources, ideas, and materials in the discussion and creation of a unique body of ceramic works.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

same as above

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of communication. 200 – 300 words.*

Students create artworks that visually communicate ideas drawn from their personal lives or from their perspectives about the world. Learners must utilize color, shape, textures, and lines to create direct narrative elements such as storytelling through the ceramic product or to express emotions through design. Learners demonstrate knowledge through verbal presentations of what techniques they used to best communicate stories and emotions. Students are then required to orally present their work and elaborate on what worked well and identify areas for improvement. This information will be recorded in their art journals. Students must also be receptive to and respond to criticism of other students. During group and individual teacher/student discussions, students share their learning process as they present the influences and origins of their ideas.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students are challenged to think creatively to apply ideas in original ways to their work. They must consider how they will communicate ideas visually and how the work will be received and understood by others. After receiving feedback from students and the instructor, they must consider what changes they might make to improve the work whether through improvement of the narrative/idea being communicated or improvements in the quality/application of the techniques. Students make choices about whether to create symmetrical or asymmetrical works, in other words whether the work is balanced with an equal number of elements on either side or unequal. Students will have knowledge about what can change the feeling that is emoted through the work. In upper divisions, students learn to mix glazes which uses mathematics and chemistry to create precise reactions in the glazes when the work is heated in the kiln. In lower levels, glaze mixing is introduced to the degree that students understand that different effects are produced based on the properties of glaze ingredients and the need for the precise application of formulas and ratios in the production of glazes.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The making of traditional and contemporary ceramics utilizes materials that can pose health hazards if used improperly. Students demonstrate an understanding of the dangers of working with dry clay and glaze materials and know how to utilize dust masks and respirators. Students demonstrate a mastery of cleaning the art space and creating minimal dust. Students are aware that clay dust can stay suspended in air after several hours so it is essential that all cleaning be done with minimal dust creation. Ceramics requires personal responsibility and an understanding of safe handling techniques for one's own safety and the safety of others in the shared environment.

Critiques provide an opportunity for both reflection and candid assessment of students' work and other works, and to take responsibility for correctable deficiencies and catastrophic failures in a civil way. These skills will be modeled by the instructor. Students are exposed to intercultural artwork and are required to evaluate the pieces based on social and cultural depictions of others' worlds. The instructor will use music from various cultures to inspire art that reflects the culture in a variety of ways.

Students are required to maintain a clean environment and to take responsibility for their working areas to ready the space for future use by others.

At the end of the semester during a public showing of the work, students will demonstrate an ability to engage with the public about their work in a respectful and constructive manner.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

under construction

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



## Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Ceramics II Assessment Sample

Filename: Ceramics\_II\_Assessment\_Sample.docx Size: 14.1 kB



## Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Sample Rubric for art portfolio

Filename: Sample\_Rubric\_for\_art\_portfolio\_NdBKQJ8.docx Size: 14.3 kB

## Application: 0000000198

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



## Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:



1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Vincent S Schenck
Title	Music Appreciation: Jazz
Phone	505-508-3711
Email	vschenck@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	MUSC
Number	1110
Title	Music Appreciation: Jazz
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	MUSC
Number	1110
Name	Music Appreciation: Jazz

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Develop a vocabulary of musical terms, and be able to describe music using those terms
2. Demonstrate knowledge of composers, their music and their relationship to historical periods
3. Recognize how music played and plays a political, social, and cultural function
4. Identify well-known pieces and the historical and social context in which they were composed
5. Demonstrate basic understanding of music notation and musical communication

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Throughout the course, instructors present listening examples of historical and/or contemporary jazz works, such as Big Band, Bop, Swing, Ragtime, Latin Jazz, and/or Cool Jazz, to facilitate student's genre and medium awareness. Students will attend jazz music concerts at The Outpost Performance Space or other venues and, in written form, provide a reflection and evaluation of the performances applying a theoretical and cultural lens. Student concert reports evaluate the auditory experience--mode, meter, tempo, dynamics, texture--of the performance while producing arguments which will be assessed for students' defense of their critiques of the technical skills in the musical works presented.

Reference: Sample Assessment – Concert Form

See questions: 5, 7, 8, 9

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will apply problem setting in their concert reports. Students will acquire evidence for their report by analyzing and evaluating various aspects of jazz compositions including: instrument recognition, historical eras, composer, genre, and the application of musical terms and concepts. In the final portion of the report form students defend and evaluate their reasoning and conclusions about two separate pieces by the same composer in a live versus recorded performance.

Reference: Sample Assessment – Concert Form

See questions: 5, 7, 8, 10

***Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Throughout the semester, students are engage with a variety of music by composers from different parts of the United States and time periods and will apply an understanding of intercultural reasoning and competence by participating as an audience member of a jazz concert. Students will also discuss the global reach of jazz as they listen to recordings of compositions from around the world. By attending a collaborative live musical performance, students are exposed to sounds made by acoustic instruments and voices which are based on human made music systems that reflect the patterns and proportions of the natural world. In the performance environment, students will develop a knowledge and practice of civic engagement and will be assessed for their display of concert etiquette.

Reference: Sample Assessment – Concert Form

See questions: 1-4, 9, Program

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 21 2019



#### Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### MUSC 1110 Sample-Assessment - Concert Form

Filename: MUSC\_1110\_Sample-Assessment\_-\_Concert\_Form.docx Size: 17.8 kB



#### Upload Rubric

Completed - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### MUSC 1110 Scoring Rubric

Filename: MUSC\_1110\_Scoring\_Rubric.docx Size: 14.3 kB

### Application: 0000000092

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



#### Application Form

Completed - Mar 20 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Rinita Mazumdar
Title	Full Time instructor
Phone	505-224-4000 x 50007
Email	rmazumdar@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	GNDR
Number	2110
Title	Introduction to Women, Gender and Sexuality Studies
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No



## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	GNDR
Number	2110
Name	Introduction to Women, Gender and Sexuality Studies

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Understand foundational concepts, theories, and approaches to gender and sexuality in conjunction with contemporary social justice movements such as feminism.
2. Describe the range of social and political forces that shape and are shaped by gender, sexuality, race/ethnicity, and other intersecting categories of identity.
3. Demonstrate the ability to conduct intersectional analysis.
4. Develop and improve skills in reading, critical thinking, academic writing, and public speaking

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Genre awareness is addressed throughout the semester, with a focus on understanding the ways notions of gender and sexuality are shaped by cultural, societal, economic, and political forces. Medium awareness focuses on how various sociocultural categories are constructed by and through mediums, such as literature, television, and other forms of mass media. Application and versatility are stressed as students must evaluate and analyze the various intersections of sociocultural categories, such as gender, sexuality, race, social class, etc. Students identify and demonstrate strategies necessary for effective and appropriate communication of their ideas, theoretical lens, and arguments in both written and oral mediums. These strategies highlight message understanding through the evaluation, analysis, and production of arguments related to gender and intersectionality.

Students are evaluated through various assessments, such a midterm essay, which requires them to demonstrate understanding of course content by analyzing course readings, evaluating their arguments, counterarguments, and articulating their own stance.

Another assessment, a research paper (attached), requires students to research and locate articles pertaining to a theory that was covered in the course. Once they obtain these articles, students must evaluate authority of sources and apply strategies to read and distinguish the main points presented. As part of this assessment, students differentiate claims and the types support the author's use, synthesize arguments, incorporate their own analysis, and ethically and appropriately use APA citation style throughout the paper. Moreover, the course utilizes journaling to convey as a way for student to articulate their interpretation of the materials presented throughout the course and formulate their own theoretical lens for viewing sociocultural phenomena.

Student performance on formal assessments are graded according to a rubric (sample attached with research paper).

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

In the course, students cultivate critical thinking skills necessary for a variety of contexts, including problem-setting, evidence acquisition, evaluation, and reasoning. These are demonstrated through a variety of low-stakes assessments as well as formal written assessments. For example, in several of the low-stakes assessments, students must demonstrate critical thinking skills by evaluating video clips to identify and critique authors' and presenters' perspectives and/or views on a problem or concern related to the systems of domination and oppression that are created via economic, social, and cultural structures. Through these low-stake assessments, students learn to draw conclusions and reflect on personal assumptions to better understand how hegemonic power structures contribute to ideology and create oppression. A more formal assessment, a midterm essay, requires students to identify evidence to build an argument and reflect upon the arguments that have been presented in their textbook and in other course materials, such as videos. One of the more formal assessments, a research paper (attached), requires students to gather information by researching articles pertaining to a theory covered in class. As part of the research process, students evaluate sources and data for credibility, probable truth, and relevance to a situation. Students then have to develop and articulate their conclusions, using reasoning to support their argument. In addition, as part of this assessment, students posit open-ended questions based on their research. Their performance is evaluated via a grading rubric (attached).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students demonstrate collaboration and teamwork skills in class through their completion of discussions and group activities. Group activities require students to collaborate as a team in order to answer questions using their textbook and other course materials as support. Students write responses to these questions and orally present their answers to the class.

Students come to better understand intercultural experiences through course materials, addressing the intersectional nature of gender, sexuality, race, social class, etc., how these categories are socially constructed, and the interrelationship of politics and the economy on the formation of these constructs. Students demonstrate intercultural reasoning skills and intercultural competence through formal assessments, such as midterm and final essay questions, by describing social justice issues that relate to a variety of sociocultural factors, such as gender and sexuality. Students also evaluate their own experiences and perceptions of gender and sexuality in reflective journals.

In both low-stakes in-class activities and on formal assessments, students engage in civic discourse and expand their level of civic knowledge and engagement by explaining diverse positions and perspectives on global social justice issues, such as gender discrimination, labor practices, etc. For example, in-class discussions and debates require students to respectfully engage with diverse perspectives, while presenting their own position on a particular issue. Students skills in this area are assessed through their performance on these assignments.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 18 2019



## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### 2110 Assessment

Filename: 2110\_Assessment.docx Size: 15.1 kB



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### 2110 Research Paper Rubric

Filename: 2110\_Research\_Paper\_Rubric.docx Size: 15.3 kB

## Application: 0000000117

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	David Chavez
Title	Full-Time Faculty
Phone	224-4000 ext. 52257
Email	dchavez287@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	PHIL
Number	1120
Title	Logic, Reasoning, and Critical Thinking
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)



## New Mexico Common Course Information

Prefix	PHIL
Number	1120
Name	Logic, Reasoning, and Critical Thinking

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Comprehend components of arguments.
2. Acquire a general understanding of the essential logical concepts needed for argument analysis, such as validity, soundness, deduction, and induction.
3. Critically assess arguments with an aim toward identifying what constitutes effective and reasonable argument strategies.
4. Learn to identify common logical fallacies.
5. Apply knowledge of argumentation principles to philosophical and scholarly texts.
6. Learn to compose effective argument essays.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

- (1) In doing the attached analysis paper, students delineate a problem or question by identifying a substantive point of moral debate and framing their discussion of it in terms of competing theories within the field of applied ethics
- (2) Students identify and gather the necessary information to address the problem by (a) clearly articulating the problem of human ethical obligations to animals framed by the author in order to then (b) gather and utilize prominent theories in the field of ethics to analyze the problem, (c) locate the author's main argument on the topic, and finally (d) access previous learning and information from logic to evaluate the author's argument.
- (3) Students evaluate evidence, proposals, and arguments for credibility and probable truth by employing various analytical tools introduced throughout the semester: (a) students use the logical concepts of truth, validity, soundness, and cogency to assess and construct arguments; (b) students use assessments of the relative strengths and weaknesses of competing ethical theories to evaluate the plausibility of concrete proposals regarding the ethics of animal use.
- (4) Relatedly, students develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation by: (a) providing arguments that as far as possible conform to the logical standards (introduced in the course) validity, soundness, strength, and cogency and (b) anticipating and responding to possible objections to their proposals.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

(1) In this paper project, students demonstrate intercultural reasoning and intercultural competence by:

(a) explaining and analyzing different (and possibly conflicting) historical and cultural perspectives on moral value; (b) Recognizing and explaining diverse moral perspectives; (c) and considering possible ways of adjudicating, in a principled fashion, between conflicting moral theories and frameworks.

(2) Students address sustainability and the natural and human worlds in some measure by: explaining and contrasting different moral frameworks vis-à-vis the use of animals by humans; and (b) explaining and critically evaluating a philosophical text (and argument) regarding the ethics of animal use in science, commercial agriculture, and other contexts.

(3) Students demonstrate ethical reasoning by: (a) articulating and evaluating how well prominent ethical theories comparatively perform vis-à-vis intuitive questions about the extent of human ethical obligations to non-human animals; (b) applying the tools of logic to objectively evaluate a prominent argument for animal rights; and (c) developing their own conclusions and, to the extent possible, sound arguments on that topic.

(4) In this paper, students demonstrate awareness civic discourse, including problems that hinder progress by, among other things: (a) explaining diverse positions on the position of animals in the hierarchy and nature of value, (b) demonstrating the need for reasoned, principled arguments in civic discourse, and (c) applying the tools of logic construct reasoned, publicly shareable arguments and conclusions on ethical matters.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

(1) In this paper students recognize the authority and value of information by: (a) accessing scholarly works to inform their writing, (b) producing a substantive document in which they must properly credit and cite all external sources of ideas, explanations, and quotations (a strict non-plagiarism policy is explained and enforced); and (c) students apply an appropriate citation style.

(2) Students understand, communicate, create, and design in digital environments by: (a) constructing digital documents following appropriate styles and formatting; (b) communicate with instructor electronically following proper conventions; and (c) utilize Blackboard to access various course materials.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHIL 1120, Critical Response Paper

Filename: PHIL\_1120\_Critical\_Response\_Paper.pdf Size: 49.4 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000248

Sara Vigil - savigil@luna.edu

NM General Education Curriculum



### Application Form

Completed - Mar 25 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	sara vigil
Title	Faculty
Phone	5054542592
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### Submitting Institution

Name of HEI	Luna Community College
Submitting Department	Humanities

### Chief Academic Officer

Name	Sharon Lalla
Email	slalla@luna.edu

### Registrar

Name	Henrietta Maestas
Email	hmaestas@luna.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	ENG
Number	115
Title	Freshman Composition II
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

Yes

**Co-requisite Course**

Prefix	ENG
Number	106
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	1120
Name	English Composition II

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- Analyze the rhetorical situation for purpose, main ideas, support, audience, and organizational strategies in a variety of genres.
- Employ writing processes such as planning, organizing, composing, and revising.
- Use a variety of research methods to gather appropriate, credible information.
- Evaluate sources, claims, and evidence for their relevance, credibility, and purpose.
- Quote, paraphrase, and summarize sources ethically, citing and documenting them appropriately.
- Integrate information from sources to effectively support claims as well as other purposes (to provide background information, evidence/examples, illustrate an alternative view, etc.).
- Use an appropriate voice (including syntax and word choice).

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Employ MLA & APA styles to format and cite sources

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Through several essays assigned throughout the course (Cause & Effect, Literary Analysis, and Position essay), students will become aware of the different conventions of multiple writing genres. Each essay must contain an argumentative thesis that is appropriate for the purpose and audience of the essay. The process of writing students will conduct with each essay will allow them to determine the best way to communicate their message and argument with their audience. To effectively reach their audience, they will have to provide various sources gathered through diverse research, including books, websites, and electronic databases. Through the research process, students will have to evaluate the arguments, evidence, structure, effectiveness, and purpose of already established arguments and determine how they can best use this evidence to build their own arguments.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Through the research process and writing process conducted during the writing of essays, students will have to evaluate controversial topics, critically read articles and novels, and determine how they will present their own arguments. For the Position Essay students will have to evaluate all sides of a controversial topic, and determine which side is most accurate according to the research they conducted. They will have to determine the most logical and ethical way to organize their argument, as well as how to reason with the opposition. Each main point that the students present must be supported through reliable and accurate research.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

All essays must be completed electronically using a word processing program such as, Microsoft Word or Google Docs. Essays need to be formatted using MLA or APA style guidelines, which demands that students learn how to incorporate page numbers, running headers, fonts, proper spacing, and indentation. Students will also engage in academic online research using databases such as Ebsco and Google Scholar. They will also have to evaluate if the sources they use for research are appropriate, credible, and reliable.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

NA

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



Upload Assessment

Completed - Mar 25 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**Position Paper Assignment**

Filename: Position\_Paper\_Assignment.doc Size: 31.7 kB



Upload Rubric

Completed - Mar 25 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**ENG 115 Timed Essay Rubric**

## Application: 0000000185

Don Scroggins - don.scroggins@clovis.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17**,

**2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins
Title	Division Chair
Phone	5757694909
Email	don.scroggins@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

### Institutional Course Information

Prefix	PHYS
Number	113
Title	Survey of Physics and Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	n/a
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	PHYS
Number	1115C
Name	Survey of Physics with Lab

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

1. Apply concepts of classical mechanics (such as velocity, acceleration, force, inertia, momentum, torque, work, energy) to simple static and dynamic systems.
2. Apply concepts of thermodynamics (such as heat, temperature, internal energy, entropy) to simple processes.
3. Apply concepts of electricity and magnetism (such as fields, potential, charge conservation, static and dynamic induction) to simple circuits, motors, and other simple contrivances.
4. Apply simple geometric and wave optics in simple situations.
5. Test ideas using modern laboratory equipment.
6. Estimate experimental uncertainties.
7. Use computers to analyze and report laboratory results.
8. Draw appropriate conclusions from quantitative scientific observations.
9. Accurately and clearly communicate the results of scientific experiments.

**Optional Student Learning Outcomes**

1. Apply quantum theory in simple situations such as the Bohr model of the atom, dual nature of light, atomic spectra.
2. Apply simple concepts of relativity.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

While using scientific inquiry and the scientific method throughout the semester, students encounter and are assessed with open-ended questions and problems on homework assignments, tests, the final exam, and lab exercises. These questions and problems will require critical thinking skills in order to determine an appropriate response to the questions. Students will also be required to use critical thinking skills by acquiring given data, discerning the unknown factors of the problem, evaluating the data to determine a possible solution pathway, and finally substituting data into an equation to produce a reasonable and accurate conclusion. These critical thinking skills then allow the student to choose and then develop appropriate problem solving strategies to successfully calculate answers to the problems they will encounter across the semester. The questions will require more than simple one-word answers and the students will be evaluated on how well they have analyzed not only their answer but also why they did not choose to select alternative responses to the question. When students are performing calculations, the primary criteria for grading will be whether they arrived at the correct answer to the problem. However, they will also be evaluated on their approach to the problem. The students will be expected to demonstrate their ability to recognize what they are given and what they are asked to determine. When there are multiple approaches to solving a problem, students receive credit for presenting a clear and logical solution that demonstrates critical thinking and for developing their own original solutions.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will perform calculations throughout the semester involving basic math skills on homework, labs, tests, and the final exam. These calculations will involve straightforward applications of three-variable equations, but they will also involve equations involving as many as six variables that the students will learn to rearrange in order to solve for the desired quantity. The students will also learn to solve problems and represent data that include quantities expressed in scientific notation such as the speed of light in a vacuum and Coulomb's law constant. Students will learn to analyze their answers and then determine if they have a reasonable result based on order of magnitude estimations. The students are assessed on the how well they organize and show their work in addition to the correctness of their answers. Students will be allowed to receive partial credit based on the work they show if they fail to calculate the correct answer as long as they show their work and any errors in their calculations can be identified. This allowance provides learning reinforcement of analysis of quantitative arguments and application of quantitative models. Students have opportunities to learn from any previous mistakes. These opportunities promote future success with problems on subsequent assignments, labs, tests, and the final exam.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The efficiency of a heat engine depends on the work produced vs. the quantity of heat that is provided to the engine. In addition, the Carnot (or reversible) efficiency depends on the temperature of the heat brought into the engine and the temperature of the surroundings which will receive the exhausted heat. The efficiency can be improved by increasing the Carnot efficiency which can be done by raising the temperature of the intake heat. During the study of thermodynamics and other studies across the semester, students will be presented with a scenario giving, in this case, the amount of work a heat engine can perform with a given amount of heat if the heat engine is using saturated steam. Students work in collaboration to determine how far they can increase the efficiency of the heat engine by using superheated steam. They will examine the costs locally and globally involved in superheating the steam and then they will analyze the advantages and disadvantages of using superheated steam in a heat engine, including the costs of the energy required to superheat the steam. These scenario/case studies engage students as they collaborate and consider the impact that physics has on cultures, resource sustainability and wise use, ethics, and civic responsibility. Personal and social responsibility skills are assessed via scenario/case studies, quizzes, and exams.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Phys 1115C Final Exam

Filename: Phys\_1115C\_Final\_Exam.doc Size: 38.4 kB



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Phys 113 Overview-Sched

Filename: Phys\_113\_Overview-Sched.doc Size: 50.7 kB

## Application: 0000000089

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

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7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

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### Contact Information

Name	Rinita Mazumadar
Title	Full Time Instructor
Phone	505-224-4000 x 50007
Email	rmazumdar@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	AFST
Number	1110
Title	Introduction to Africana Studies
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	AFST
Number	1110
Name	Introduction to Africana Studies

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:

<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will carry out critical analysis and engagement with complex, interdependent global systems and legacies (natural, physical, social, cultural, economic, and political) and their implications for people's lives and the earth's sustainability
2. Students will explore issues/objects/works through collection and analysis of evidence that result in informed conclusions/judgments, understanding and analysis of critical literacy and ethics pertaining to the dynamics of diversity, equity, inclusion and social change
3. Students will examine habits of mind characterized by the comprehensive exploration of issues, ideas, artifacts and events related to diversity, equity and inclusion before accepting or formulating an opinion or conclusion
4. Students will demonstrate the capacity to combine or synthesize existing ideas, images, or expertise in original ways
5. Students will prepare, purposeful presentations designed to increase knowledge, foster understanding, or promote change in listener's values, beliefs, or behaviors pertaining to the dynamics of diversity, equity, inclusion and social change
6. Students will develop and express ideas in writing and learning in many genres and styles using different writing technologies, mixing texts, data and images that relate to the dynamics of diversity, equity, inclusion and social change
7. Students will show the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situation
8. Students will demonstrate the ability to know a need for information or visual literacy and understanding of the dynamics of historic and contemporary inequality and how they shape individual and community power, biases, structural arrangements and social justice bias.

Recommended SLOs to be included:

9. Students will enact behaviors and efforts and interact with others on the team to enhance the quality

and quantity of contributions made to team discussions

10. Students will design, evaluate and implement strategies to answer open-ended questions in multiple ways

11. Students will work to make a difference in the civic life of communities and develop the combination of knowledge, skills and values and motivation to make a difference

12. Students will develop their cognitive, affective and behavioral skills and characteristics to support effective and appropriate interaction in a variety of cultures

13. Students will develop their ethical self-identity as they practice ethical decision making skills while learning how to describe and analyze positions on ethical issues

14. Students will engage in self-reflection regarding one's own history and position in contemporary U.S. society as well as in a global context

15. Student learners will connect perspectives and integrate relevant experience and academic knowledge from multiple disciplines

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Medium awareness is addressed throughout the semester as students develop an understanding of how historical and current social phenomena have shaped and affected the lives of black people and through mediums such as literature, television, and other forms of mass media. Students communicate the application and versatility of their understanding through various genres- oral, written, and digital- in various assessments throughout the course. These include discussions, midterm-essay questions (attached), papers, and blogs.

Students also demonstrate strategies for understanding and evaluating messages in essays and papers. For example, the attached assessment consisting of mid-term essay questions requires students to analyze specific arguments and apply a theoretical lens in order to understand and evaluate them. Moreover, as part of this assessment, students critique concepts, theories, and arguments that they have been presented with and provide their own arguments and counterarguments in response.

In another assessment, a research paper, students describe three main factors that have contributed to the political economy of slavery in the U.S. during the early 19th century, in order to evaluate arguments and produce their own. As part of this assessment, students conduct research where they evaluate the authority of the sources, differentiate claims, facts, inferences, opinions, and synthesize their findings. Students then make their own arguments/claims, provide support for their assertions, and ethically and appropriately use APA citation style throughout the paper.

This course also using blogging to communicate in digital formats and students articulate their understanding of course concepts and formulate their own theoretical lens.

Student performance on formal assessments are graded according to a rubric (sample attached with essay questions

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

In the course, students cultivate critical thinking skills necessary for a variety of contexts, including problem-setting, evidence acquisition, evaluation, and reasoning. These are demonstrated through a variety of assessments, such as essay questions, a research paper, and professional development assignments. For example, in professional development assessments, students engage in problem-setting by stating and creating open-ended questions which they then use to identify perspectives and views on a particular problem, such as the current social, political, educational, and economic condition of black people throughout the U.S. and around the world. As part of this, students acquire evidence from a variety of sources to gather the information necessary to address their question(s) and problem. In another assessment, a research paper, students conduct research and evaluate the credibility of the sources obtained and differentiate relevant from irrelevant information. Students then develop and articulate their conclusions, using reasoning to support their argument(s).

In the short-essay assessment (attached), students reflect upon the arguments that have been presented in their textbook and in other course materials to assess agreement among authorities, critique arguments, and develop their own conclusions.

Blogging is also used in the course to enable students to demonstrate awareness of the acquisition process and examine their own personal assumptions.

Their performance is evaluated via a grading rubric (attached).



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students come to better understand intercultural experiences through course materials addressing how the market, kinship, family, and state are posited differently vis-a-vis people of different race and ethnicities. Students cultivate understanding and a theoretical lens and demonstrate their intercultural reasoning and competence through assessments like discussions and papers. For example, in discussions, students respond to questions which require them to confront ethnocentrism in a variety of contexts, such as in education, and describes social justice issues related people of color in the U.S. and around the world. Students also evaluate and articulate their own experiences and perceptions through blogging and discussion posts. Students demonstrate collaboration and teamwork skills through their completion of discussions. Moreover, as part of their research paper, students write a first draft and do peer comments, which involves students collaborating in teams and engaging in an exchange of diverse knowledge. Through discussions, students engage in civic discourse and expand their level of civic knowledge and engagement by explaining diverse positions and perspectives on global social justice issues, such as racial discrimination. These discussions require students to respectfully engage with diverse perspectives, while presenting their own position on a particular issue. Students skills in this area are assessed through their performance on these assignments.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 18 2019



## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### AFST Assessment and Rubric

Filename: AFST\_Assessment\_and\_Rubric\_.docx Size: 15.1 kB



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### AFST Rubric

Filename: AFST\_Rubric.docx Size: 13.4 kB

## Application: 0000000227

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel Peterman
Title	Full Time English Faculty
Phone	(505) 224-4000 ext. 53007
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### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	ENGL
Number	2510
Title	Analysis of Literature
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2510
Name	Analysis of Literature

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate an understanding of biographical, critical, cultural, and historical contexts.
2. Examine how the formal elements of a text create meaning.
3. Identify and apply various critical approaches to analyzing literature.
4. Summarize and evaluate scholarly articles in literary studies.
5. Integrate academic research to produce clear and detailed literary analysis about major texts from the course.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

The attached assignment is an example of the ways in which this class meets the requirements for Critical Thinking as follows:

- Problem setting – This assignment is an example of how ENGL 2510 requires students to develop problem setting as part of the essential skill of problem setting by giving students parameters and a framework for the assignment but leaving the analytical task up to them to develop. The two options for the assignments require that students first familiarize themselves with various critical literary theories and select a poem which to analyze for the insights provided by these theories or to find a theme developed across several works by a writer or writers and analyze how this theme is developed. This requires that students first delineate problem, in this case what sorts of analyses and interpretations are possible, and then develop a plan and process by which to further develop these analyses. The type of work required in this assignment is part of an ongoing process in ENGL 2510 and represents skills developed and strengthened throughout the course.
- Evidence Acquisition - In order to analyze the theme, students must acquire evidence from the poem or poems themselves, such as the various literary techniques used by the author or authors and apply principles of literature they've covered in the class. These various principles will be delivered both in readings and class lectures and lessons. As a literature class, these basic principles will be applied a number of ways in both this assignment and later tasks. Furthermore, while students are provided with lesson and readings about theoretical frameworks, additional research will be needed to learn more about the application of literary theories.
- Evidence Evaluation – Based on their knowledge and understanding of various literary techniques and devices, students will critically analyze poetry for a theme through the use of close reading of the text,

application of the conventions of literature, and do so through a carefully crafted essay. This helps reinforce valuable skills such as close, critical reading and an understanding of genre conventions. Additionally, students will have to evaluate other works by the author if following the second option to make sure they fit the theme or they will have to evaluate which literary theory or theories make the most sense to apply to their analysis of a single poem. This application will carry over to other assignments and types of literature.

- Reasoning/Conclusion – The primary task of both options on this assignment, and a key task developed throughout ENGL 2510, is the ability to reason through texts via close reading, analysis, and the application of theoretical frameworks to draw conclusions regarding messages, meanings, and the significance of various written works. These skills are developed through daily reading assignments, class discussions, and this and other written assignments.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The attached assignment is an example of the ways in which this class meets the requirements for Critical Thinking as follows:

- Intercultural reasoning and intercultural competence – Throughout ENGL 2510, students are presented with literature written across a number of different cultures as well as learning to understand various literary theories and the application of those theories to literary works. Theories such as critical race theory and postcolonial theory help students learn to reason through the cultural contexts of works while theories like Marxism can help students understand the interplay of material and culture. Throughout ENGL 2510, students gain intercultural competence as a result of reading works created outside of their cultural framework with the assistance of various theoretical frameworks.
- Civic discourse, civic knowledge and engagement – local and global – As an important method of human expression, literature is a form of discourse between readers and writers. Furthermore, the reading of literature is often shaped by local and global understandings while the writing of literature is often a response to events within various communities. Literary techniques such as symbolism and allusion are based in shared cultural understandings of what kinds of works or images people value. More importantly, as noted above, since literature exists within an intercultural space, the level of civic knowledge and engagement is heightened as students are assigned a variety of works with which they must engage both on a personal level but also through class discussions. An assignment like this is reflective of how students engage with various written works in this class and how they must engage with this as a form of civic discourse while also drawing upon a larger civic knowledge.



**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

- **Authority and Value of Information** – One of the ways in which a literature class, specifically ENGL 2510, addresses the authority and value of information is how it simultaneously presents students with knowledge of the various components, techniques, and devices used in different genres of literature while also equipping them to draw their own conclusions about the significance of various writings, authors, and movements within literature while also encouraging them to challenge and push against these boundaries through an ever expanding canon of literature. As this work is done, in the attached assignment for example, students will focus on traditional techniques employed in literature in order to present their analyses and arguments in academically appropriate ways through the use of close reading, reasoning, and adherence to the conventions of academic writing. This requirement, while allowing for a reexamination of what counts as literature, helps ensure that students are dealing with works appropriate for the level at which they're learning and writing.
- **Information Structure** – While completing this assignment and the various other assignments for this course, students must select appropriate ways in which to present their information, which types of information to use to develop their ideas, and to properly organize and structure their writing in the conventions of academic essay writing. Specifically, this assignment asks students to presuppose an audience of literary scholars and to make choices in how they present their information that are appropriate for this audience.
- **Research as Inquiry** – This assignment is emblematic of this course in that students are not given an interpretation ahead of time nor are they asked to take certain point of view in their analysis, but instead they must follow an iterative process in which they closely read a work and develop questions regarding meaning and significance which they then answer through close reading, application of course concepts, and the accumulation of outside materials to provide answers to these self-generated questions. Additionally, students will be required to engage in research throughout the semester to find additional information regarding authors, their works, and the various theoretical frameworks applied to the analysis of literature.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### ENGL 2510 Assignment

Filename: ENGL\_2510\_Assignment.docx Size: 15.2 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000096**

Gina Hartwick - hartwick@nmmti.edu

NM General Education Curriculum



Application Form

Completed - Mar 19 2019

#### Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Gina Hartwick
Title	Associate Professor of Mathematics
Phone	575-624-8159
Email	hartwick@nmmti.edu

### Submitting Institution

Name of HEI	New Mexico Military Institute
Submitting Department	Mathematics and Sciences

### Chief Academic Officer

Name	Douglas Murray
Email	dmurray@nmmi.edu

### Registrar

Name	Chris Wright
Email	wright@nmmi.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	MATH
Number	1173
Title	Math for Business and Social Science
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

Yes

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	MATH
Number	1150
Name	Business Math

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Students will:

1. Display, analyze, and interpret data.
2. Demonstrate knowledge of problem-solving strategies.
3. Construct valid mathematical explanations.
4. Display an understanding of the development of mathematics.
5. Demonstrate an appreciation for the extent, application, and beauty of mathematics.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Upon graduation from NMMI, a cadet who has completed coursework in the field of mathematics will be able to:

1. Demonstrate mathematical knowledge and skills.
2. Demonstrate mathematical models to solve problems in a variety of contexts.
3. Employ current technology for individualized learning and problem solving and the preparation of assignments.
4. Exhibit the learning skills necessary to succeed in mathematics.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will be asked to construct written responses to mathematical problems. Written responses will include a statement of the problem, steps to solve the problem, and conclusions that can be drawn from the mathematical operations. Students will be required to understand the strategy used to solve the problem (which address genre and medium awareness), and state the implications of their solution when solving a real world problem (which addresses evaluation and production of arguments). Stress will be placed on providing an answer to the question, and not just boxing the answer at the end of the problem.

While studying math of finance, students will be asked to find present value of loan, future value of loan, interest rates, and payment amounts for a variety of contexts. It is vital that the student is able to read a hypothetical situation, and determine what each of the values represent (addressing strategies for understanding and evaluating messages). Most math for finance problems will fit one or two formulas. The same formulas can be used to answer questions about home mortgages, car payments, savings account balances and annuity payments (addresses application and versatility).

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical thinking is the basis for mathematics and problem solving. Critical thinking is used to evaluate what needs to be solved, construct equations to solve the problem, and interpret the solution in the context of the original problem description. By the end of this course students will be exposed to many mathematical concepts that require them to use critical thinking. For example, while studying linear programming, students must be able to determine what needs to be optimized, and what are the restricting constraints on that optimal value. Students will demonstrate their knowledge of inequalities, matrices, linear programming, probability, and math of finance by thinking critically and communicating in symbolic or graphical form through the online learning tools developed by the publisher to demonstrate proficiency in homework assessments. Students will adopt new perspectives in problem solving. They will work problems backwards. They will use logical reasoning and guess and check approaches. They will account for a variety of possible outcomes. All of these skills will be assessed through the online learning tools developed by the publisher to get credit for the homework. . Additionally, problem solving critical thinking skills will be assessed throughout the semester by written quizzes and exams. The final exam will assess whether the student is able to make connections of all the topics learned throughout the semester and apply appropriate techniques in the appropriate contexts. The learning outcomes vary from chapter to chapter but critical thinking is the basis for mathematics and problem solving.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

By the end of this course, students will demonstrate a mastery of a variety of quantitative skills related to math literacy. Graphical analysis of a linear programming problem is a great example. Students will be given constraints in the form of linear inequalities. Sometimes, the student must derive the constraint inequalities from the context of a word problem. The graphs of these linear inequalities on the same graph will create a region. The region is a representation of quantitative information. The border of that region contains an optimal value, more specifically the corner points of the region formed by the linear inequalities. By evaluating the objective function at each corner point, the student will analyze which corner point is the maximum and which corner point is the minimum. Application of linear programming is applied to the fields of optimizing production level, store product placement, balanced diet options, and cost/revenue/profit analysis, just to name a few. Linear programming models can also be represented in matrix form. The matrix form of a linear programming model is particularly useful because technology is used to solve it as a program can be written and utilized to find the solution. The students will then interpret the solution in the context of the real world application.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Sample Linear Programming Examples



## Upload Rubric

Completed - Mar 19 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## CriticalThinkingRubricupdated

Filename: CriticalThinkingRubricupdated\_kanIDgd.pdf Size: 180.6 kB

## Application: 0000000183

Janett Johnson - janett.johnson@clovis.edu  
NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	SPAN
Number	102
Title	Beginning Spanish II
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	SPAN
Number	1120
Name	Spanish II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students can participate in conversations on a number of familiar topics using simple sentences.
2. Students can handle short social interactions in everyday situations by asking and answering simple questions.
3. Students can present basic information on familiar topics using language they have practiced using phrases and simple sentences.
4. Students can write briefly about most familiar topics and present information using a series of simple sentences.
5. Students can understand the main idea in short, simple messages and presentations on familiar topics.
6. Students can understand the main idea of simple conversations that they overhear. 7. Students can understand the main idea of short and simple texts when the topic is familiar.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

As a continuation of Spanish 1110, students in this class across the semester will view, analyze and critically construe significant and primary texts and/or work of art, including fine art, literature, music, theater, and film. Students will continue to develop learning skills and an expansion of the Spanish language as well as the Hispanic culture. Students will be able to identify and compare the diversity of cultures and of the human experience across a range of historical periods. Students will draw on historical and cultural perspectives to evaluate contemporary modes of expression and contemporary thought. Students will be able to gain new perspective and regard of the importance of Hispanic norms, values, and customs. Students will research and analyze historical events, folklore, individuals, and countries that are symbolic to the Hispanic culture and its importance to the past, present, and future.

***Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will further identify diversity of the human and social experiences within the Hispanic culture as well as the comparative human and social experiences of other cultures during the semester. Students will compare the diverse cultural perspectives to identify the development of language, economy, society, government, religion, and culture within peoples and the impact on their developing societies. Students will be able to practice and model various Hispanic traditions through modes of presentations and student involvement. All student's skills and development will be evaluated by taking a comprehensive and objective final exam. Final exam included the basics of the Spanish Language that students learned throughout the semester. Exam questions will come from lectures, quizzes, written, and visual assignments as well as cultural knowledge and understanding of materials which were presented and gained throughout the semester including movies, readings, and specific subject research.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

As a continuation of Spanish 1110, in this course, students will actively participated in class discussions and online discussion boards during the semester. Students will continue to be exposed to and required to use a range of media sources, including word processing software, YouTube video clips, subject related websites, and a host of other digital venues to reinforce visually the contextual basis of ideas, events, language and historical aspects. Students will also be able to practice their skills and check cultural comprehension through various online assessment tools, such as Kahoot, Quizziz, and/or Jeopardy. Students will discuss cultural events, using YouTube videos to develop a deeper sense of the history, culture, influences, behaviors, and customs. Through viewing of video clips, writing activities, and research papers, as well as continuous interaction with peers, students will gain a strong representation of the Hispanic culture. The various tools implemented in this course, through both the face to face classroom environment and the Canvas Digital Learning platform, will strengthen the student's ability to further develop computer skills, technological steps, and platform skills which are required to access the course shell within Canvas. Also within the Canvas course shell, students will utilize exams, practice quizzes, written assignments, study guides, and student-driven threaded discussion questions that allow interaction with fellow classmates and the instructor.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## SPAN 102-SPAN 1120 Assessment

Filename: SPAN\_102-SPAN\_1120\_Assessment.pdf Size: 91.9 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## SPAN 102-SPAN 1120 Syllabus

Filename: SPAN\_102-SPAN\_1120\_Syllabus.pdf Size: 148.2 kB

## Application: 0000000093

Daniel McLaughlin - dmclaughlin@navajotech.edu  
NM General Education Curriculum



### Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning



4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Science

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	BIO
Number	224
Title	Microbiology
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	BIOL
Number	2310
Name	Microbiology

**A. Content Area and Essential Skills**

## **To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## **B. Learning Outcomes**

### **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Describe and compare the structure and function of prokaryotic and eukaryotic cells. 2. Describe and compare the techniques used for staining of and microscopic observation of bacteria including morphology. 3. Describe the nutritional requirements for bacterial growth and the impact of environmental factors on bacterial growth (temperature, pH, oxygen, etc.). 4. Describe and compare the mechanisms of aerobic respiration, anaerobic respiration, and fermentative metabolism. 5. Describe the mechanism of bacterial growth by binary fission, and laboratory methods used for observing and measuring bacterial growth. 6. Describe the mechanisms of bacterial DNA replication, RNA transcription, and translation, and compare and contrast with eukaryotic cells. 7. Describe the structure and replication strategies of viruses. 8. Describe and contrast mechanisms of innate nonspecific immunity and adaptive specific immunity. 9. Describe immune hypersensitivity reactions, autoimmune diseases, and immunodeficiency diseases. 10. Differentiate between host microbe relationships, mechanisms of microbial pathogenesis, differentiate between communicable and noncommunicable diseases and describe mechanisms of direct and indirect transmission of communicable diseases.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Microbiology provides students with the knowledge to analyze and understand the microbial population and its role within their respective ecosystem. The students learn about the morphology and characteristics of non-pathogenic and pathogenic microorganisms. Students are taught and tested on the various applications and uses for different microorganisms with the medical and microbiological fields. Students are assessed on their knowledge of microbial metabolism, immunology, and genetics by essays, oral presentations, homework, and exams. Students are challenged to use the knowledge acquired to identify an unknown sample by administering the sample through a series of tests and procedures that were taught during lab. These tests will provide information about the morphology and characteristics of the unknown sample which will allow the students to develop a conclusion based on the results to determine the microorganism's identity.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Microbiology provides students with the ability to learn about the qualitative and quantitative aspects of the microbial populations within each ecosystem. Students are taught about microbial growth, incubation times and temperatures, oxygen requirements for growth, optimal temperatures for growth, and disease expansion for different microorganisms. During microbiology lab, students use mathematical equations to determine how much material is needed for each procedure to provide enough product to be used for the experiment. Students use the temperatures and incubation times to grow their microorganisms that they inoculated. Students count how many colony forming units (CFUs) they inoculated onto their petri-dishes after incubation. Students will be using their quantitative data to describe their microorganisms on their unknown sample report at the end of the course.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Microbiology provides the students with the knowledge and different applications of microorganisms to help with medical advances in human as well as animal medicine. Students learn the meaning of teamwork and collaboration while working in a laboratory setting in order to pursue research possibilities. Research in the microbiology field is needed to sustain and advance medical practices to contend with diseases that are evolving every day and prevent the outbreak of these diseases. Students in this course will learn to maintain and discover new information in the microbiological field by reading research articles and writing research papers to expand their knowledge outside of the classroom.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 18 2019



**Upload Assessment**

**Completed** - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

BIO224

**Filename:** BIO224.assessment.docx **Size:** 22.7 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000169**

Daniel McLaughlin - dmclaughlin@navajotech.edu  
NM General Education Curriculum



**Application Form**

**Completed** - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Science

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	CHM
Number	120
Title	General Chemistry I
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)



## New Mexico Common Course Information

Prefix	CHEM
Number	1215C
Name	General Chemistry I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

#### Lecture Student Learning Outcomes

1. Use dimensional analysis, the SI system of units and appropriate significant figures to solve quantitative calculations in science.
2. Explain the structure of atoms, isotopes and ions in terms of subatomic particles.
3. Understand the differences between physical and chemical changes to matter, and utilize the IUPAC system of nomenclature and knowledge of reaction types to describe chemical changes, predict products and represent the process as a balanced equation.
4. Apply the mole concept to amounts on a macroscopic and a microscopic level and use this to perform stoichiometric calculations including for reactions in solution, gases and thermochemistry.
5. Apply the gas laws and kinetic molecular theory to relate atomic level behavior to macroscopic properties.
6. Describe the energy conversions that occur in chemical reactions and state changes, relating heat of reaction to thermodynamic properties such as enthalpy and internal energy, and apply these principles to measure and calculate energy changes in reaction.
7. Use different bonding models to describe formation of compounds (ionic and covalent), and apply knowledge of electronic structure to determine molecular spatial arrangement and polarity.

8. Analyze how periodic properties (e.g. electronegativity, atomic and ionic radii, ionization energy, electron affinity, metallic character) and reactivity of elements results from electron configurations of atoms.

#### Laboratory Student Learning Outcomes

1. Demonstrate and apply concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value with the correct units, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Prepare solutions with an acceptable accuracy to a known concentration using appropriate glassware.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Demonstrate mastery in experimental techniques, such as chromatography, filtration, and distillation experiments.
7. Draw conclusions based on data and analyses from laboratory experiments.
8. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
10. Design experimental procedures to study chemical phenomena.

#### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

General Chemistry lecture and lab activities will provide the students the basic knowledge about chemistry and chemical reactions. The students will learn about laboratory safety, determination of mass, use of chemical glassware, determination of melting and boiling points, identification of chemical substances, molecular shapes and structures, and classification of chemical reactions. Students are taught and evaluated in the various general chemistry aspects. Student learning process will be assessed through assignments, quizzes, and lab reports. All the lecture classes are integrated with hands-on learning activities. Students will get the training to determine the mass, density, boiling point, and melting point of unknown compounds. In particular, students learn about dimensional analysis and unit conversions, which are specific to critical thinking in everyday life.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

General chemistry offers students both qualitative and quantitative information. Lecture classes will cover the chemical foundations such as scientific method, units of measurements, significant figures and calculations, learning to solve problems systematically, dimensional analysis, atoms, molecules, and ions, and the history of chemistry. Also, students learn about fundamental chemical laws, modern views of atomic structures, molecules, ions, introduction to the periodic table and naming compounds. Furthermore, stoichiometric reactions, types of chemical reactions, solutions in stoichiometry, and gases will be discussed in detail. Also, related lab sessions will help students understand more about the general chemistry.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

All the general chemistry lab experiments will be conducted as team work. Students will form their own teams and work together to complete all the lab tasks. During the lab sessions, students will learn about the importance of the team work. Also, this course focuses on hands-on lab activities. Therefore, all the students will get the opportunity to learn and discover new information about chemicals, structures, reactions, able to read basic research articles, able to observe and take notes, able to understand the local, global chemical problems, and their social responsibility.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 20 2019



### Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

CHM120

Filename: CHM120.sample-assessment.docx Size: 26.0 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000209

Robin Jones - jonesr@clovis.edu

NM General Education Curriculum



### Application Form

Incomplete

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	(No response)
Title	(No response)
Phone	(No response)
Email	(No response)

### Submitting Institution

Name of HEI	(No response)
Submitting Department	(No response)

### Chief Academic Officer

Name	(No response)
Email	(No response)

## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	(No response)
Number	(No response)
Title	(No response)
Number of credits	(No response)

## Was this course previously part of the New Mexico General Education curriculum?

(No response)

## Will this course only count toward General Education for the AAS degree (at your institution)?

(No response)

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	(No response)
Number	(No response)
Name	(No response)

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

(No response)

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

(No response)

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

(No response)



## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

## D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

(No response)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

(No response)



Upload Assessment

Incomplete

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000202**

A. BAILEY Pagels - pagelsa@wnmu.edu  
NM General Education Curriculum



## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

### Essential Skills

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

### Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Corrie Neighbors
Title	Environmental Geology
Phone	575-538-6352
Email	corrie.neighbors@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	GEOL
Number	1120 (201/203)
Title	Environmental Geology
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	GEOL
Number	1120L
Title (if applicable)	Environmental Geology Laboratory, 1 credit

**New Mexico Common Course Information**

Prefix	GEOL
Number	1120/1120L
Name	Environmental Geology & Laboratory

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for GEOL 1120 Environmental Geology and GEOL 1120L  
Environmental Geology Laboratory

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Apply the scientific method to the field of environmental geology and differentiate between facts and opinions.
2. Recognize or describe natural cycles, for example the rock cycle, hydrologic cycle, and carbon cycle.
3. Discuss and explain the role humans play in environmental problems and in solutions to those problems; relate environmental geology to your life and its portrayal in the media.
4. Recognize, discuss or explain geologic hazards and their impact on humans and how these impacts can be minimized.
5. Recognize or explain a holistic approach to sustainability (mineral, energy, water and soil resources) on local to global scales while minimizing negative impacts on the environment.
6. Recognize, discuss or explain global environmental issues, including climate change, and the varied responses to these issues.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

**Problem Setting:**

Understand that scientists rely on evidence obtained from observations. Students learn to make basic scientific observations related to earth processes.

**Evidence Acquisition:**

Students are expected to be able to describe the processes of scientific thought including observation, hypotheses formation, experiment design, positive and negative controls in experiments and alternative hypotheses. Students make observations of earth processes and generate a hypothesis to understand and explain their observations.

**Evidence Evaluation:**

Throughout the semester, students are required to gather information from experiments in a group setting. The students then compare their data with the data from other teams and compare and contrast aspects of their respective experiments.

**Reasoning and Conclusion:**

Students are required to formulate a hypothesis and then design and conduct an experiment to test the hypothesis. Students assessed their results in the context of results from other teams and then remark on the materials and methods of the experiments. Additionally, students are required to identify weaknesses and issues associated with their experiment and provide suggestions as how to move forward with revised experiments.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information:

The students work in groups to perform the experiments and collect the data, and are required to provide individual reports and data analysis in graphical formats. Students are compelled to show their work throughout the mathematical analysis of the data to effectively communicate the quantitative reasoning and method applied.

Analysis of Quantitative Arguments:

Students are required to select and perform appropriate quantitative analyses of scientific observations. Students graph data (e.g., sea surface temperature, flood recurrence interval) and interpret trends in the data. Students perform calculations from mapped data.

Application of Quantitative Models:

Students collect data and apply discrete data points on a graph. Students are then expected to think outside the parameters of the experiment to make predictions about how different conditions would affect the outcomes. After the gathering of quantitative data, students are required to identify possible sources of error relating to the data sets and methods used.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the Natural and Human Worlds:

Students should gain knowledge of natural Earth resources (e.g., minerals, rocks, water) and how they are consumed and appropriated by society. Students become aware of the dynamic changes of the Earth and the time dependent nature of Earth processes and resources (e.g., rate of aquifer recharge as compared to drawdown consumption). Students gain understanding of the dynamic nature of the Earth, both from natural and anthropogenic processes.

Civic Discourse, Civic Knowledge and Engagement – Local and Global:

Students, as members of society, gain knowledge of the scientific method and how to apply this method to real-world problems (e.g., how to assess geohazard to a potential new home site). Students learn how to use scientific data and methods (i.e., the scientific method is not a belief) for the betterment of society in public discourse and policy. Students understand how to interpret and develop scientific concepts and how these ultimately are used to create policy (e.g, insurance rates for homes and buildings in a floodplain, building codes for earthquakes, or defensible area from wildfires). This course promotes national STEM learning objectives that ensure we effectively communicate the use science, math, and engineering in society (e.g., interpretation of maps and graphs with quantitative analysis).

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtxsUi0CJHkV5-rKUrPnEBVUkNjaJPSJAaorjVJhNqiW?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019





## Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### 3A-GEOL 1120-1120L Environmental Geology & Lab -Ex Asses 1 -WMU

Filename: 3A-GEOL\_1120-1120L\_Environmental\_Geol\_QhCUTEF.docx Size: 17.9 kB



## Upload Rubric

Completed - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### 2- GEOL 1120-1120L Environmental Geology & Lab -Syllabus -WNMU

Filename: 2-\_GEOL\_1120-1120L\_Environmental\_Geolo\_j67SCAb.pdf Size: 6.0 MB

**Application: 0000000087**

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



## Application Form

Completed - Mar 18 2019

## Application Form

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins/Lilly Robino
Title	Division Chair/adjunct professor
Phone	5757694909
Email	don.scroggins@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	CHEM
Number	151
Title	General Chemistry 1 and Lab
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	MATH
Number	110
Title (if applicable)	College Algebra

## New Mexico Common Course Information

Prefix	CHEM
Number	1215C
Name	General Chemistry I Lecture and Laboratory for STEM Majors

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

#### Lecture Student Learning Outcomes

1. Use dimensional analysis, the SI system of units and appropriate significant figures to solve quantitative calculations in science.
2. Explain the structure of atoms, isotopes and ions in terms of subatomic particles.
3. Understand the differences between physical and chemical changes to matter, and utilize the IUPAC system of nomenclature and knowledge of reaction types to describe chemical changes, predict products and represent the process as a balanced equation.
4. Apply the mole concept to amounts on a macroscopic and a microscopic level and use this to perform stoichiometric calculations including for reactions in solution, gases and thermochemistry.
5. Apply the gas laws and kinetic molecular theory to relate atomic level behavior to macroscopic properties.
6. Describe the energy conversions that occur in chemical reactions and state changes, relating heat of reaction to thermodynamic properties such as enthalpy and internal energy, and apply these principles to measure and calculate energy changes in reaction.
7. Use different bonding models to describe formation of compounds (ionic and covalent), and apply

knowledge of electronic structure to determine molecular spatial arrangement and polarity.

8. Analyze how periodic properties (e.g. electronegativity, atomic and ionic radii, ionization energy, electron affinity, metallic character) and reactivity of elements results from electron configurations of atoms.

#### Laboratory Student Learning Outcomes

1. Demonstrate and apply concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value with the correct units, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Prepare solutions with an acceptable accuracy to a known concentration using appropriate glassware.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Demonstrate mastery in experimental techniques, such as pressure measurements, calorimetric measurements, and spectrophotometric measurements
7. Draw conclusions based on data and analyses from laboratory experiments.
8. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
10. Design experimental procedures to study chemical phenomena.

#### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Critical thinking is a standard aspect of any general chemistry course. Additionally, it is the backbone of the scientific method, which the students use throughout this course. In this course, the students are assessed on critical thinking via multiple methods. Evidence acquisition, evidence evaluation and reasoning are assessed via class discussions where the students are given a topic to research and evaluate. The topics covered include how they use the scientific method in their daily lives, global warming/climate change, nutrition, and advances in science/biotechnology. The topics often require the students to find and evaluate scientific evidence and state a conclusion backed by valid evidence. In addition, the students participate in a series of lab assignments and complete a final lab project, which assess all aspects of critical thinking. The lab assignments function to guide the students through the steps of scientific method. Each individual lab assignment correlates with a particular general chemistry topic (such as gas laws, stoichiometry, or thermochemistry). The student begins by first formulating their own hypothesis based on their knowledge of the topic and background research, after which they test their hypothesis via a guided hands-on experiment or a virtual experiment. They must then evaluate data obtained from the experiment and discuss their final conclusions, including potential sources of error and future studies, all of which will be assessed via a formal lab report.

In order to evaluate their overall critical thinking skills, the students are also tasked with a final lab project in which they must follow all steps of the scientific method by designing and performing an experiment on a topic of their choosing. The students submit a formal lab report in which they discuss the relevance of their topic of choice, formulate a hypothesis, describe their full experimental procedure, present and analyze their results, and develop a conclusion based on their data and make recommendations for follow-up studies.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning occurs throughout the lecture and lab portions of this course. In the lecture portion of the course, the students use quantitative reasoning when using equations and formulas (such as converting between atoms, mass, and moles; determining product yields and limiting reactants; calculating heat energy; or determining pressure, volume and temperature relationships among gases). Assessment of the lecture material is primarily performed via exams (including a proctored midterm and final exam) and graded homework assignments.

In the lab portion of the course, the students complete several lab assignments that generate quantitative data that the students must analyze. For example, the students complete a stoichiometry lab where they must first calculate the theoretical yield of carbon dioxide gas in a simple baking soda and vinegar reaction. They then perform the experiment and determine the experimental yield of carbon dioxide and calculate and the subsequent percent yield and percent error.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

This course examines the societal impacts of some of the major topics of scientific inquiry, including global warming/climate change, ocean acidification, energy consumption, and green chemistry. This skill is assessed through online discussions and/or guided debate in which the students are asked to critically evaluate scientific information that is commonly presented to them by the media. Some topics require the students to discuss the topic and present their opinion backed by valid scientific evidence (for example, does climate change really exist), while other topics require the student to present information on topics relevant to society (for example, new scientific/biotechnological advances and their impact on society).

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 18 2019



Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Sample assessment Chem 151

Filename: Sample\_assessment\_Chem\_151.docx Size: 1.1 MB



Upload Rubric

Completed - Mar 18 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

General Chemistry I sample syllabus

Filename: General\_Chemistry\_I\_sample\_syllabus.pdf Size: 773.1 kB

**Application: 0000000228**

Annemarie Oldfield - annemarie.oldfield@roswell.enmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019



# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Robin Billington
Title	Humanities Dept. Director
Phone	575-624-7252
Email	robin.billington@roswell.enmu.edu

### Submitting Institution

Name of HEI	Eastern New Mexico University-Roswell
Submitting Department	Humanities

### Chief Academic Officer

Name	Dr. Ken Maguire
Email	ken.maguire@roswell.enmu.edu

### Registrar

Name	Dr. Linda Neel
Email	linda.neel@roswell.enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	ART
Number	106
Title	Design I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	na
Number	na
Title (if applicable)	na

## New Mexico Common Course Information

Prefix	ARTS
Number	1240
Name	Design I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Produce art works that apply and organize the elements of two-dimensional form (line, shape, value, texture, color and space). 2. Produce artworks that apply the principles of two-dimensional design (harmony, variety, repetition, balance, rhythm, proportion, dominance, movement, and economy). 3. Demonstrate effective use of materials and techniques with consideration for craftsmanship and presentation. 4. Use visual art vocabulary in the development and critique of work 5. Explore concepts and ideas: from conceptual, realistic/referential to non-representational

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

same as above

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will learn how to work with others, engage with their audience, and effectively communicate their skills and expertise. They will exhibit awareness of their genre and medium by sharing and discussing their creations with others. Students create artwork which demonstrates versatility and application of different art strategies. This course requires that students master two-dimensional design. Students will demonstrate an ability to deliver and evaluate arguments through giving and receiving outside critique on assignments. This critique will occur in a group environment. After receiving and analyzing critique, learners are then required to orally present their work and elaborate on what worked well and identify areas for achieving improvement. Additionally, students learn how to be versatile in their creations in order to reach a larger audience. During more group and individual teacher/student discussions, students share their learning process as they present the influences and origins of their ideas.

Along with developing visual presentation skills, such as generating visual aids and supplementary materials, students will demonstrate written communication skills through the production of written critiques of others' creations and through personal art journals

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will be challenged to think creatively to solve problems and errors pertaining to their artwork. Students will demonstrate emotion in their work based on a variety of prompts. They will use instructor feedback, student evaluation, and evidence from texts to identify and rectify faults in theirs and in others' works. Students will apply original ideas in original ways by experimenting with various styles and motifs. In order to determine similarity and originality, students will compare their own creations to others in the field. Through the production of a short one-page strategy piece, students will demonstrate an understanding of how to express ideas visually and how the piece will be perceived by others. After receiving feedback from students and instructor, students must verbally and in writing articulate how they will make changes to the their piece. Learners must consider what changes they might make to improve the work based on the narrative/idea being communicated by the instructor or peers. The student must then make improvements in the quality/application using a variety of techniques. Each assignment requires student demonstration of necessary principles like balance, emphasis, movement, pattern, repetition, proportion, rhythm, variety and unity critical thinking process. Finally, students will come to an ultimate conclusion about the merit of their productions based on the above-mentioned criteria.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Through the production of a written response to a critique, students take responsibility for their own artistic development. Critiques provide an opportunity for reflection and candid assessment of their work and others, and to celebrate successes and take responsibility for correctable deficiencies and catastrophic failures in a constructive manner. Learners demonstrate the ability to both offer and receive feedback in a constructive critical environment. The skills needed to engage in a critical environment, including offering and receiving instructor generated feedback, will directly lead to future coursework and life skills as students gain an understanding of methods by which to listen carefully and humbly to feedback, and to deliver constructive assessments in a comforting, helpful manner. These skills will be modeled by the instructor. Students are exposed to intercultural artwork and are required to evaluate the pieces based on social and cultural depictions of others' worlds. The instructor will use music from various cultures to inspire art that reflects the culture in a variety of ways. Students are required to maintain a clean environment and to take responsibility for their working areas to ready the space for future use by others. At an end-of-the-semester showing of the work, students will demonstrate an ability to engage with the public about their work in a respectful and constructive manner.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan  
under construction

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



## Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Sample Assessment for Design and Drawing Classes

Filename: Sample\_Assessment\_for\_Design\_and\_Draw\_9IM6d8g.docx Size: 13.6 kB



## Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Sample Rubric for art portfolio

Filename: Sample\_Rubric\_for\_art\_portfolio.docx Size: 14.3 kB

## Application: 0000000095

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Trent Toulouse
Title	FT Faculty
Phone	224.4000 x53029
Email	ttoulouse1@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu



## Registrar

Name	(No response)
Email	(No response)

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	PSYC
Number	2330
Title	Psychology of Human Sexuality
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	PSYC
Number	2330
Name	Psychology of Human Sexuality

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Describe central research questions, theories, concepts, and methodologies used in the study of human sexuality.
2. Distinguish between myths and realities related to sexuality.
3. Explain changes in sexuality across the lifespan.
4. Describe the interactions of biological, psychological, and sociocultural dimensions in human sexuality.
5. Identify issues related to sexual health.
6. Explain complex and diverse issues related to human sexuality.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

At the start of the course, students are introduced to genre and medium awareness through discussion and examples of how human sexuality is presented in the multiple media formats. Students find and discuss examples from social media, magazines, newspapers, television, movies and music. In addition, students examine how audience and medium affect not only presentation but also the accuracy or validity of the central message. Students then apply this understanding by finding their own examples of sexuality messages in the media, from Calvin Klein ads, Beyoncé songs, Kardashian Instagram posts, to DC and Marvel films, and evaluate how genre and medium effect the presentation of the message. They also explore how both positive and negative images are portrayed and how these connect to broader social issues. Through developing a written critique that includes drafting, instructor feedback, peer review and revision students acquire strategies for evaluating messages and by providing peer review to other students they explore multiple genres and mediums. Effective communication is informally assessed based on small group discussions and through a formal assessment (see the attached assignment) of the final written critique. As the course continues, these skills are reinforced through continual analysis of the media portrayals of sexuality using written assignments as well as small and large group discussions.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students engage in problem setting as they discuss from where our ideas of human sexuality derive and assess how both individuals and the culture at large frame this discussion. As students gather information about sexuality from multiple sources, whether scholarly or popular, about behavior, self-concept, portrayals, and controversies, they are developing and demonstrating evidence acquisition skills. Evaluating the obtained information for credibility, accuracy, and relevance encourages students to develop evidence-based evaluation skills. This is particularly important in a class that covers material--very rarely is framed in the wider culture as evidence based—to draw conclusions about factors affecting perception and behaviors of sexuality. By addressing ways to improve not just a personal but a broader understanding of course concepts, students are developing good reasoning skills.

Assessment of these critical thinking skills includes informal feedback in class as students complete individual exercises/projects and as students engage in group work. Groups often include research of media portrayals of sexuality messaging found in print media (magazine articles, ads, etc.), television (commercials, sitcoms, etc.) and/or music (songs/videos), and analysis of persistent myths and their implications. A presentation or research paper investigating many common myths in human sexual psychology is assigned to help students develop research skills and help them differentiate fact from myth/opinion (see attached sample assignment). Grading rubrics are used to formally assess presentations and research papers. (Please see the following rubrics.)

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

At the beginning of the course, to encourage the development of ethical reasoning skills, students are introduced to information on the psychological components of bias and prejudice both explicit and implicit that color our understanding of complex issues involving sexuality. Throughout the term, the interaction between personal concepts and cultural norms about sexuality are discussed as students evaluate major themes, mythologies, and evidence-based studies. By exploring evidence-based research about personal and cultural bias and prejudice, in scholarly journals like *Sexualities* and *The Journal of Psychology and Sexuality*, a broader understanding of each person's civic knowledge and responsibilities about sexuality emerges as a major theme for the course.

Students engage in class discussions, small group discussions, debates, group projects, and/or group presentations to aid in the development of collaboration and teamwork skills. Guidelines encourage (a) participation by all students, (b) encourage students to be culturally sensitive in their remarks, and (c) encourage students to consider other viewpoints. (Please see the attached guidelines.) The instructor provides feedback informally in class as discussions take place. Group work is formally assessed by the instructor. Additionally, students engage in self-assessment as they evaluate and reflect on their contributions to the group. Finally, students engage in peer assessment. (Please see the attached Self and Peer Evaluation Form.)

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 18 2019



## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Part\_1Media\_Sources\_Assignment(1)

Filename: Part\_1Media\_Sources\_Assignment1.doc Size: 41.0 kB



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Research-Media Grading Rubric

Filename: Research-Media\_Grading\_Rubric.doc Size: 28.2 kB

## Application: 0000000075

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



## Application Form

Completed - Mar 18 2019

## Application Form

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## Essential Skills

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Cory Roberts
Title	Full Time Instructor
Phone	5757694910
Email	cory.roberts@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	BIOL
Number	212
Title	Human Anatomy and Physiology II and Lab
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	BIOL
Number	211
Title (if applicable)	Human Anatomy and Physiology I



## New Mexico Common Course Information

Prefix	BIOL
Number	2225C
Name	Human Anatomy and Physiology II Lecture and Laboratory

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Student Learning Outcomes: (lecture)

1. Identify and describe the major anatomical features of the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems.
2. Analyze the physiological roles of the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems in maintaining homeostasis in the human body.
3. Explain how fluid and electrolyte balance is maintained in the human body.
4. Compare and contrast the anatomy and physiology of male and female reproductive systems.
5. Describe pregnancy from conception to parturition including human growth and development from zygote to newborn.
6. Explain heredity and genetic control.

Student Learning Outcomes: (laboratory)

1. Apply the scientific method correctly.
2. Collect, analyze, and interpret scientific data.
3. Use laboratory equipment, such as a microscope, correctly and safely.
4. Identify the anatomical components of human tissues, organs, and organ systems using prepared microscope slides, models, diagrams, illustrations, or cadaver specimens.
5. Describe the functional characteristics of human tissues, organs, and organ systems using prepared microscope slides, models, diagrams, illustrations, or cadaver specimens.
6. Analyze the physiological processes of the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems.
7. Analyze the physiological processes of fluid and electrolyte balance and acid base balance in the human body.
8. Analyze heredity and genetic control.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

The problem setting that students encounter across the semester is learning and using the scientific method as it applies to human anatomy and physiology. Students will be assessed by their lab results completed before, during, and after experimentation. Evidence acquisition will take place in a laboratory setting as students support concepts of homeostasis by examining critically normal human physiology. Students learn reasoning and conclusion skills through interpretation of lab results and ability to apply scientific knowledge to unknown biological situations. Reasoning and conclusion skills are assessed through class and lab assignments and formal course exams. Critical thinking skills will be assessed through both critical thinking multiple choice and essay questions.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will learn communication of quantitative information throughout the course with discussions of case studies and homeostatic imbalances concerning human anatomy and physiology. Students will learn to represent data during collection and presentation of data in tabular and graphical form during lab experiments. Students will learn to analyze quantitative information by working with sample data sets or data they collected as part of a lab exercise. Application of quantitative models will take place in a laboratory setting. Quantitative reasoning skills will be assessed through lab reports, discussion forums, and formal course exams.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Across the semester, in this course, students will examine human culture in the context of human anatomy and physiology, the impacts of physical, chemical and environmental conditions on human biology and health, including sustainable practice, especially in the medical arena. Ethical reasoning will be addressed in class discussions and applied for research questions in human health. Students will discuss the human species, physiological needs, causes and ecology of human diseases and the implications of humans as drivers of environmental, human health and biological change. Collaboration skills, teamwork and value systems are developed throughout the course as students are required to work with one another to learn the anatomy of the body and use their combined skills towards civic engagement. Personal and social responsibility skills are assessed using discussion forums, quizzes, and formal exams.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 15 2019



**Upload Assessment**

**Completed** - Mar 15 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**Sample assessment BIOL 212**

**Filename:** Sample\_assessment\_BIOL\_212.pdf **Size:** 2.2 MB



**Upload Rubric**

**Completed** - Mar 15 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**CourseSyllabusBIOL212-103NewtonSP19**

**Filename:** CourseSyllabusBIOL212-103NewtonSP19.docx **Size:** 31.8 kB

**Application: 0000000051**

steven young - young@nmml.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	steven young
Title	assistant prof math
Phone	5756248154
Email	young@nmml.edu

### Submitting Institution

Name of HEI	NMMI
Submitting Department	Math

### Chief Academic Officer

Name	General Douglas Murray
Email	DMurray@nmmi.edu

### Registrar

Name	Chris Wright
Email	Wright@nmmi.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	Math
Number	1604
Title	PreCalculus
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

Yes

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	(No response)
Number	(No response)
Name	(No response)

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

**B. Learning Outcomes**



**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Represent functions graphically, numerically, verbally, and as an equation
2. Find the domain and range of a function
3. Use the properties of polynomials and rational functions such as end behavior, intercepts, and asymptotes to sketch their graphs.
4. Determine intervals where a function is increasing/decreasing and relate that to minimum and maximum values.
5. Understand the form and applications of the conics (parabolas, hyperbola and ellipse)
6. Be familiar with polar coordinates and polar equations and conversions between the two systems.
7. Understand the various graphing transformations
8. Understand logarithms and exponential functions and that they are inverse functions of each other. Be familiar with financial applications and exponential growth/decay
9. Know the domain/range and the graphs of the three primary trig functions and their reciprocals.
10. Compute the average rate of change of function using either of the difference quotient formulas.
11. Be able to verify trig identities and use them to solve equations
12. Solve Right Triangles and Oblique Triangles
13. Use the unit circle and radian measure to solve applications
14. Perform vector operations and use vectors to solve motion and force problems
15. Use functions and equations to solve problems from other subjects.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Upon graduation from NMML, a cadet who has completed coursework in the field of mathematics will be able to:

1. Demonstrate mathematical knowledge and skills.
2. Demonstrate mathematical models to solve problems in a variety of contexts.
3. Employ current technology for individualized learning and problem solving and the preparation of assignments.
4. Exhibit the learning skills necessary to succeed in mathematics.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Pre-Calculus provides an excellent framework for the evaluation and production of arguments. An example would be the proof for the area of a sector of a circle based on the angle in radians and the radius of the circle. Some students would observe that a sector is a fraction of the area of circle, and then try to produce a formula for the area of a sector that relates back to the well-known formula for the area of a circle. If this were setup as a group exercise, other members of the group could evaluate the quality of the argument helping to determine if the proof was sound and convincing. Proving a result often aids in more readily remembering the result, so doing proofs, time permitting, is a worthwhile endeavor.

Mathematical proofs are usually written in a terse symbolic form as a final product, but groups trying to discover a proof might assemble and brainstorm by talking through (oral medium) various approaches. A member of the group could record the thoughts, findings and discoveries of the group regarding the nature of the proof. So switching between written and oral communications can have a clear benefit in the formation and production of proofs.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

One example which promotes critical thinking is to ask students to visualize the possible number of points of intersection of an arbitrarily specified parabola with an arbitrarily specified circle. The reasoning involved only depends on students being familiar with the shapes of the graphs. Some time will be allocated to allow students to work individually or in groups to discover the number of distinct cases. The evidence acquisition (visually estimating the points of intersection) will be strictly graphical at this stage with no simultaneous systems of equations being solved. Next, students will solve the system of equations and compare their results with their visual estimates. In this evidence evaluation phase of this critical thinking exercise, they will first check to see if the number of solutions in their estimate is the same as what the math reveals. (Reasoning/Conclusion). If it is, then they will check the values of their estimate to see if they are close to the solutions of the system of equations.

A separate discovery project related to this particular problem, would be the case where the parabola does not intersect the circle. The students could relate this back to the discriminant that arises in the solution of a simultaneous system. The negative discriminant indicates no real solutions which is consistent with no intersection points!

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

The representation of quantitative information as piece-wise functions is an insightful element of the course. In particular, students analyze a drug dosage piece wise function where injections of a drug are made periodically to the patient. Students easily observe the spike in the concentration of the drug in patient's bloodstream at the time of the injection on a piece-wise graph. They also note the discontinuity between the metabolizing of the drug and the injection. This is a great introduction to a practical application of left hand and right hand limits as they relate to discontinuities. Some of the students keenly note that this type of quantitative model is superior to having the drug concentration values represented in a table. More effort is required to locate the injection discontinuities if data is represented in tabular form which is rather eye straining compared to viewing the graph of the piece-wise function.

Modeling quantitative periodic data is illustrated during the trigonometry portion of the course. The amount of sunlight as a function of the day of the year is well modeled by sinusoidal functions. Calculus concepts such finding the minimum and maximum amount of daylight hours can be illustrated technologically leading into the concept of setting derivative equal to zero to find the horizontal tangent lines that locate these minimums and maximums.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 17 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Circles and Lines

Filename: Circles\_and\_Lines.docx Size: 128.5 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000098

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Terri Koontz
Title	FT Instructor Biology
Phone	505-224-4000 ext 50929
Email	tkoontz@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	MSE

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	BIOL
Number	1125
Title	Human Biology
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	BIOL
Number	1125
Name	Human Biology

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- Outcome #1: Describe and apply the scientific method. Components: a. Define what it means to be scientific and explain why science is restricted to using the scientific method.  
b. Apply the scientific method to a specific situation. c. Accurately describe the differences between a hypothesis and a scientific theory. d. Distinguish between science and pseudoscience and provide a comparative example.  
e. Design a simple experiment that properly uses the scientific method. f. Collect data from an experiment and produce a graph that can be used to interpolate and extrapolate information.  
g. Discern between reputable and non-reputable sources of scientific information
- Outcome #2: Apply basic scientific terminology to the human body. Components: a. Explain the different levels of organization and provide examples of each level b. Define basic medical terms used by physicians to describe aspects of human health c. Apply basic medical terms to the understanding of one's own body
- Outcome #3: Explain the roles of macromolecules in the human body. Components: a. List and define the four biological macromolecules and provide at least one example for each.  
b. Explain how nutrient labels of commercial foods relate to the macromolecules c. Describe how nutrients are used in the body to provide energy
- Outcome #4: Explain the basic functions of at least 5 organ systems and how they interact with each other. Components: a. Describe the organs of systems so they may understand the structural and organizational relationships in the way the systems work b. Explain at least one way that the systems described can maintain homeostasis in a healthy person
- Outcome #5: Explain how human health and activity influence the environment, economy, society and history. Components: a. Describe how aspects of human physiology can affect the health and safety of local environments.  
b. Explain how the knowledge of human health and physiology has brought about changes in the ways we engage in health practices and develop therapies for disease. c. Provide examples of how human health has affected the history of a country and how it has resulted in the ways various countries derived their system of governance over time.



## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

To assess “Problem Setting”, students at the beginning of the class will ask a question that they have about human biology, develop a hypothesis and prediction, and then design their own experiment using the scientific method to test the validity of their hypothesis.

As the course progresses, students then acquire knowledge of being able to identify different forms of scientific literature (primary, secondary, and grey) from each other and from an unreliable source. Several different forms of literature are presented to the student where they identify the article as primary, secondary, grey, or false. Three follow up questions determine if the student understands how each of the articles is classified at a specific level of professional writing. This activity assesses the students’ competence at “Evidence Evaluation.”

Following the above-mentioned activity, students use this knowledge of identifying proper literature sources to find science articles that are related to various assignments that involve solving case studies, relating organ systems to different cultures and subcultures, and coming to conclusions in a final project. Overall, students gather science articles for a total of 5 assignments during the term to answer questions and problems to learn “Evidence Acquisition.”

Within the final project, students compile science articles related to a diseased state in the body and then discuss how knowledge of human health and physiology has brought changes in the ways we engage in health practices and develop therapies for disease. This final project is the culmination of a semester of evidence acquisition that allows students to express their “Reasoning/Conclusion” skills by taking learned information and forming opinions concerning healthcare.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To assess quantitative reasoning students initially learn the difference between independent and dependent variables. As this skill is developed, near the end of the term within an organ system lab report or informal paper (e.g. blog) students apply this skill to developing their own experiment. In this single assessment all three quantitative reasoning component skills are addressed.

“Communication/Representation of Quantitative Information” is demonstrated by the students as they either collect data via the internet or within their real life to construct a graph that they use to interpret the relationship between the two variables and how those variables either provide observational data or supports (or does not support) their hypothesis.

In addition, the chosen organ system will also contain quantitative models (e.g. electrocardiograms) that students will apply when describing how the quantitative model is expressed in a “normal” individual. This part of the assignment is assessing the student’s ability to perform the “Analysis of Quantitative Arguments” component skill.

Finally, to assess the “Application of Quantitative Models” and further explore the “Analysis of Quantitative Arguments” students will interpret scientific literature of an individual who is within a diseased state (e.g. arrhythmia) and then predict what the quantitative model, such as an electrocardiogram, would be for a person who has that diseased state.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To assess “Collaboration Skills, Teamwork and Value Systems” students will perform a group project at the end of the term. This group project will assess their ability to work together as a group and to collaborate with one another to allocate tasks so that all parts of the project are completed. The goals of the group project are exploring a diseased state in the body, using information from an article to discuss what changes in our knowledge of the human body has contributed to healthcare, and describing how human health has affected a country and/or its system of governance.

Prior to the group project, students will have already completed an informal paper that describes the relevance or modification of an organ system within a particular culture. For example, a lip plate, a human modification of the integumentary system, in some African tribes is a ritual that signifies that a female is available for marriage. This exploration into other cultures and how the human body may be expressed differently either through the environment or human manipulation, addresses the “Intercultural Reasoning and Intercultural Competence” component for this essential skill.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## BIOL 1220 Heart Disease Blog Assignment

Filename: BIOL\_1220\_Heart\_Disease\_Blog\_Assignment.docx Size: 13.2 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Rubric for BIOL 1220 Assessment

Filename: Rubric\_for\_BIOL\_1220\_Assessment.docx Size: 13.0 kB

## Application: 0000000194

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	SP
Number	214
Title	Intermediate Spanish I
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	SPAN
Number	2110
Name	Spanish III

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students can participate in conversations on familiar topics using sentences and series of sentences.
2. Students can handle short social interactions in everyday situations by asking and answering a variety of questions.
3. Students can usually say what they want to say about themselves and their everyday life .
4. Students can make presentations on a wide variety of familiar topics using connected sentences
5. Students can write on a wide variety of familiar topics using connected sentences.
6. Students can understand the main idea in messages and presentations on a variety of topics related to everyday life and personal interests and studies .
7. Students can under- stand the main idea in conversations that they overhear.
8. Students can understand the main idea of texts related to everyday life and personal interests or studies.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A



## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Problem Setting: Students examine cross-cultural and cross-linguistic interactions. Students state how communication issues cause problems and how clear communication and cultural knowledge can solve problems through cultural awareness and diplomacy.

Evidence Evaluation:

In this course, students not only learn language skills, but also critical thinking skills. Through critical thinking, students increase their vocabulary and cultural knowledge. In this course, students continue building the four basic skills (listening, speaking, reading and writing) that they began learning and practicing in previous Spanish classes. By the end of the semester, they have developed skills and coping strategies for filling in the gaps of imperfect comprehension. The course covers units nine to twelve of the Vistas textbook. They deal with topics like going to the doctor, technology, celebrations and housing.

Reasoning/Conclusion:

Instructors provide instruction in critical thinking related to texts and short videos throughout the course. There are forums for oral assignments and group discussions that are used to debate ideas and showcase their reasoning process. Students read and comment in writing about topics like cultural celebrations, their own and those belonging to the Hispanic world, recognizing differences and similarities, and discuss the pros and cons of technology. Instructors evaluate critical thinking and evidence acquisition in the context of an essay assignment on the topic of affordable housing and use a rubric to assess student learning.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: When learning another language and culture, students will increase their awareness of the diversity of cultures beyond the United States and analyze similarities and differences between their own culture and others in relation to perceptions, beliefs, and behavior. The goal of language learning

is not only the acquisition of communicative competence in a target language, but also the acquisition and development of intercultural competence. Learning a new language is also seen as a way to engage more effectively in the local and global communities. Students are encouraged to talk to native Spanish speakers in their local community and bring their findings to the class.

Ethical reasoning: Students engage in conversations and online discussions about culturally sensitive topics. To achieve such goals, in this course, students engage in conversations and online discussions about culturally sensitive topics like affordable housing, cultural celebrations and technology. The students' intercultural reasoning is evaluated in the context of a written assignment about one of these topics and a rubric is used to assess student learning.

Collaboration skills, teamwork and value systems: Students debate orally or online forums about different perspectives and ways of interpreting messages and situations. Collaboration skills and teamwork are encouraged by working in groups during the classes and for the final oral presentations. The students' intercultural reasoning is evaluated in the context of an online discussion about a culturally sensitive topic (for example, the use of women's images for advertising in different cultures) and instructors use a rubric to assess student learning.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Students learn the difference between credible information sources in Spanish and less credible sources. Students are presented with reliable language learning sources throughout the class

Digital Literacy: In the context of language learning, digital literacy is fundamental for students to be intelligent consumers of online language tools, and to be able to customize their own language learning process. Technology itself cannot guarantee learning but can enhance it when properly used.

Digital literacy is built-in in this course because the textbook used is a virtual one, part of the students' Vista Supersite account, which also allows students to use the website database and dictionaries.

Students learn to use composition tool to create and submit writing assignments online. Projects that develop the four basic skills (speaking, listening, reading and writing) can be extended to the Internet by using podcasts (listening and speaking) and blog entries or online discussions (reading and writing).

The nature of this course allows students to track due dates, save work, and access all assignments and resources. Instructors assess information and digital literacy in the context of online discussions and short essays or letters. Instructors use a rubric to assess student learning.

Information Structure: In this course students participate in oral assignments and group discussions in class. Some of these projects are later extended to the Internet by using podcasts (to practice listening and speaking skills) and occasionally short blog entries and essays to practice reading and writing.

Instructors assess information and digital literacy in the context of a project that includes using the Internet to create an introductory podcast and use a rubric to assess student learning.

Research as Inquiry: Cultural curiosity and the impulse to learn of new cultures and languages is itself an inquiry. This class is an answer to the natural curiosity about what unites us as humans as well as what makes each culture unique.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 21 2019



### Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### SP214 Sample assessment

Filename: SP214\_Sample\_assessment.docx Size: 13.2 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000157

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



### Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

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essential skills. Three essential skills are associated with each of six content areas:

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCC Meeting.

### Contact Information

Name	Janett Johnson
Title	(No response)
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	HIST
Number	121
Title	World Civilization I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	HIST
Number	1130
Name	World History I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

- 1) Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries of global history from ancient times to the present.
- 2) Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.
- 3) Students will summarize and appraise different historical interpretations and evidence in order to construct past events.
- 4) Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluate credibility, perspective, and relevance.
- 5) Students will create well-supported historical arguments and narratives that demonstrate an awareness of audience.
- 6) Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will analyze and critically interpret significant primary texts and/or works of art. Emphasis will be placed in these visual and written materials upon a thematic concentration concerning ideas, characteristics, and traits related to the common rise and expansion of emerging civilizations worldwide across the semester. These elements could include internal and external factors that influence the rise of civilization, an awareness of many past heritages in World History, the nature and importance of belief systems in forming behavior and social mores, and how these systems are embedded in developing laws and social institutions – as related to the development of global society from antiquity through the year 1500. In assessment, all students will take a comprehensive and objective final exam. Every multiple-choice question on the exam will be linked to one or more of the course objectives that address the area state competencies. Questions on the final exam will be based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. All exam questions will come from weekly unit quizzes and the midterm exam taken during the semester. Particular emphasis will be placed in lectures, written assignments and visual materials will be placed upon key elements of social, economic, and cultural institutions that are common to the major developing civilizations, in conjunction with lecture/reading outlines, documentary films, YouTube clips, and weekly review sessions to create an incremental sequence of student comprehension of the course objectives and competencies. Students will analyze how man progressed from the earliest communal and cooperative constructs in antiquity to the complex and varied civilizations in existence worldwide by 1500.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

During the semester, students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives to identify the individual role of economy, society, government, religion, and culture in the history of the world's developing societies. Students will demonstrate a proficiency in the recognition and articulation of the diversity of human experience across the range of Early World History to develop and understanding of how the present is informed by an awareness of the social, political, religious, cultural, and intellectual structures, particularly in regards to the progression from early civilizations to the many complex civilizations and societies in existence by 1500. In detail, students will trace and discuss the influence the role and effects of transition from Paleolithic organization to early communal societies and the Agricultural Revolution, which drove the appearance of countless early civilizations. Students will discuss how rising language usage, belief systems, social hierarchy, cooperative societies, emerging governmental systems, and developing warfare contributed to rising early civilizations, particularly in Africa and Asia, and how these early civilizations grew over time to true empires with increasingly complex structures and technologies. Particular emphasis will be placed in lectures, written assignments and visual materials will be placed upon key elements of social, economic, and cultural institutions that are common to the major developing civilizations, in conjunction with lecture/reading outlines, documentary films, YouTube clips, and weekly review sessions to create an incremental sequence of student comprehension of the course objectives and competencies.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

In this course, during the semester, students will be exposed to and required to use a range of digital platforms and media sources, including PowerPoint slide presentations, historical maps, primary documents, historical documentaries, YouTube video clips, subject related websites, and a host of other digital venues to reinforce visually the contextual basis of ideas, events, and trends discussed during the course of this class. These tools will be implemented in this course through various means in the face to face classroom environment, and through the Canvas Digital Learning platform and its many digital capabilities. Students will learn the basic computer skills, technological steps, and platform skills to access a course shell within Canvas in all classes to access the above mentioned digital course materials, as well as listen to and observe specially-created recorded lectures by the instructor using Camtasia digital video technology. Also, within the Canvas course shell, students will also utilize exam and quiz study guides, practice quizzes, written assignments, and student-driven threaded discussions questions that allow interaction with fellow classmates and the instructor.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

HIST 121-HIST 1130 Assessment

Filename: HIST\_121-HIST\_1130\_Assessment.pdf Size: 118.8 kB



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## HIST 121-HIST 1130 Syllabus

Filename: HIST\_121-HIST\_1130\_Syllabus.pdf Size: 91.2 kB

## Application: 0000000241

Annemarie Oldfield - annemarie.oldfield@roswell.enmu.edu

NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility

7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Cory Cogdill
Title	Math Director
Phone	575-624-7241
Email	cory.cogdill@roswell.enmu.edu

### Submitting Institution

Name of HEI	Eastern New Mexico University-Roswell
Submitting Department	Math

### Chief Academic Officer

Name	Dr. Ken Maguire
Email	ken.maguire@roswell.enmu.edu

### Registrar

Name	Dr. Linda Neel
Email	linda.neel@roswell.enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	MATH
Number	105
Title	Technical Math
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

Yes

### Co-requisite Course

Prefix	na
Number	na
Title (if applicable)	na

### New Mexico Common Course Information

Prefix	MATH
Number	1750
Name	Technical Math

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1.) Perform the basic arithmetic operations and be able to solve word problems. 2.) Multiply, divide, add and subtract fractions. 3.) Multiply, divide, add and subtract decimal numbers. 4.) Calculate and use ratios, percents and proportions. 5.) Readily convert units from the English system to Metric and vice-versa. 6.) State the laws of exponents and perform basic operations involving powers. 7.) Understand and apply concepts of algebra and their use in formulas related to occupational areas of study. 8.) Use mathematical language while working with algebraic expressions and equations. 9.) Solve multiple step equations and formulas. 10.) Complete fundamental operations using scientific notation. 11.) Work with angles, triangles, trigonometric functions. 12.) Solve right triangles using trigonometric ratios.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

same as above

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Throughout this course, students will practice genre and media awareness, application, and versatility as students regularly solve mathematical problems in groups, as students consider how different methods and approaches can be used to solve problems. It is only in conversation with others that one can appreciate different ways to come to the same solution. Students will share knowledge about opportunities and practices in the technical trades. These class discussions will be facilitated by the instructor in both oral and written form.

Students will practice strategies for understanding and evaluating messages as they try new approaches and develop new math awareness used in various technical professions by reading blueprints and schematics. Using various drawings and media, students will demonstrate mastery of the metric to English conversions among many other skills. Students will explain the step by step process to solve problems.

“Students will practice the evaluation and production of arguments as they translate English-language sentences into algebraic expressions and equations. Students will be expected to illustrate and solve a variety of problems using a combination of spoken, written, and symbolic mathematical language.

Once a week students will take 3-5 minutes each to explain a concept that was presented in class to another classmate. For example, students are asked to explain to each other how to read the scales on micrometers, calipers and other gauges. This is also applicable to intricate procedures. This paired response should stimulate important discussions and help students who are struggling to see concepts from a different perspective. At the end of the discussion time, we will survey students and record the number of correct answers that followed the discussion.



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

By the end of the course students will demonstrate through tests, homework and quizzes fundamental mathematics skills and more clearly understand how to perform basic mathematics operations. For example, students will delineate a problem or question from a work industry related field to include fractions and decimals simultaneously. In addition they will develop procedures for accurately performing these calculations. Students will need to discern and discuss how algebra problems will be used in real world applications and how they might acquire the necessary information needed to solve a problem. Discerning which variable remains an unknown will be assessed by homework sets and quizzes. Critically reading story problems to identify unknown quantities and represent those as variables will be routinely be demonstrated by lecture presentations, homework sets, group work and chapter tests. Students will have work problems that require understanding of how sequences of unit cancelations can be used to convert one type of measurement units into another, and to then apply this practice to different types of conversions problems. Students will read calipers, vernier calipers, and various types of gauges and apply techniques for approximating gauge needle locations and locations of caliper slide rules to provide correct values derived from using a particular measuring device. Students will have to use critical thinking to determine which variable in a formula to solve for, given particular circumstances in a story problem. This skill could help students formulate a decision or a recommendation about the information presented.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

By the end of the course students will have reinforced arithmetic skills necessary for successful use of mathematics in the trades by expressing quantitative information symbolically, graphically and in oral communication. Students will have demonstrated mathematical concepts by solving a variant of problems based on applications from the real world. Much of the learning of quantitative tools is done with group work, exit tickets, formal assessments and weekly homework assignments. Students will demonstrate the converting between the U.S. and metric systems, and expressing measurements in terms of different units. Students will solve basic equations and becoming familiar with using a variable as standing-in for an unknown number as the develop skills necessary for their trades. Students will demonstrate how to use a variable to solve an applications word problem following a particular procedure: critically reading the problem until a quantity that's unknown is identified and labeled as a variable; find the relationships using the unknown quantity; building an equation using those relationships; solve the equation; and check the answer until one is certain that the answer is valid or questionable. Students will demonstrate these skills throughout the semester in written form using math symbols and notation when necessary as well as oral communication in discussion with peers and instructor. These skill will be assessed formally and informally through homework assignments, in-class work, and unit tests.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

under construction

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Exam02

Filename: Exam02.pdf Size: 43.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000180

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility

5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Lynn Haugen
Title	Professor, Biology, Natural Sciences
Phone	575.538.6202
Email	lhaugen@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	BIOL
Number	2644
Title	Animal Form, Function, and Diversity, 3 credits
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	BIOL
Number	2644L
Title (if applicable)	Animal Form, Function, and Diversity Lab, 1 credit

**New Mexico Common Course Information**

Prefix	BIOL
Number	2644
Name	Animal Form, Function, and Diversity

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This is a unique course.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Describe and apply the scientific method to generate testable hypotheses in evolution and ecology.
2. Understand basic chemistry and the biological macromolecules.
3. Identify and describe the basic principles of evolution and the processes of speciation.
4. Describe how the hierarchical classification scheme is used to categorize organisms and be able to recognize and correctly write scientific names and taxonomy.
5. Understand phylogenetics and describe how DNA research has modernized biosystematics.
6. Compare and contrast the general characteristics of each of the living domains, kingdoms, and animal phyla.
7. Understand early embryonic development of animals.
8. Relate the structure of organisms (tissues, organs, organ systems) to the way they function.
9. Explain how the life histories of organisms are adapted for different environments.
10. Describe the ecological roles played by organisms.
11. Compare basic ecological principles at the population and community levels of organization.
12. Describe and compare energy relationships and the cycling of materials in ecosystems.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

#### Problem Setting.

Students are introduced to the scientific method and shown how knowledge is obtained by posing questions, developing hypotheses, and collecting and analyzing data in an attempt to falsify hypotheses (i.e., reject or show the hypotheses to be incorrect). Hypotheses can never be proven “true” beyond all doubt, but the confidence that we have in the truth of a hypothesis (i.e., its correctness) is related to the number and severity of the tests that have failed to falsify it. In lecture the critical skills associated with this scientific methodology are introduced and discussed, and in associated activities students construct phylogenetic trees representing hypotheses of evolutionary relationships among organisms. Well-corroborated phylogenetic hypotheses enable us to understand better the history and relationships of life on earth. A phylogenetic systematic analysis consists of 1) identifying presumed homologous characters among the organisms under study, 2) assessing the direction of character change or character modification (character state polarity analysis), and 3) constructing a cladogram of the taxa possessing the characters analyzed.

#### Evidence Acquisition.

Virtually all biological characteristics are potentially informative as to evolutionary relationships, from nucleotide sequences to whole organisms, and from behavior ethograms to geographical distributions. A phylogenetic systematic analysis consists of 1) identifying presumed homologous characters among the organisms under study, 2) assessing the direction of character change or character modification (character state polarity analysis), and 3) constructing a branching diagram (cladogram) of the taxa whose evolutionary relationships we wish to infer. Phylogenies are hypotheses about evolutionary

relationships among organisms, and like all hypotheses, they are subject to modification or even abandonment in the light of new evidence.

#### Evidence Evaluation.

When conducting laboratory experiments students collect and graph their data, and then interpret their results. Through this process they learn how evidence for or against a hypothesis is obtained and, importantly, how hypotheses are often rejected but modified with the knowledge obtained through additional experimentation. They learn of extraneous variables and how to control for them. In hypothesis testing, emphasis is on attempting to reject (i.e., falsify) rather than corroborate hypotheses, because one well-designed experiment or set of observations can, potentially, refute the hypothesis under test, whereas no matter how many times a hypothesis has been corroborated, the next test may falsify it.

#### Reasoning and Conclusion.

In both lecture and laboratory activities, students are required to think critically about the interpretation of data and the conclusions to be drawn from them. In some instances, students are required to draw conclusions based on data collected in their experiments; in other cases they are required to discuss the conclusions of experiments presented to them in lectures. They learn to understand that much of the knowledge in the sciences is based on sound experimental procedures, but that they need know the source of the evidence presented (including the funding source of the research) and have some basic scientific knowledge such that they can reasonably evaluate the conclusions.

### **Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

#### Communication/Representation of Quantitative Information.

In this course students use methods of quantitative analysis to calculate values, create graphical representations of data, interpret information presented in graphs and tables, evaluate quantitative information, and draw valid conclusions. For example, students are introduced to the mathematical concept of probability and apply that knowledge to the analysis of changes in genotypic frequencies. In the simplest case of a single genetic locus with only two alternative alleles  $p$  and  $q$ , suppose that the frequency of the  $p$  allele is 0.4 and that of the  $q$  allele is  $1-p = 0.6$ . A simple formula, the Hardy-Weinberg equation, which states that  $p^2 + 2pq + q^2 = 1$ , gives the expected genotypic frequencies if the five



assumptions of Hardy-Weinberg are met: large population size, no mutation, no differential survival by genotype (i.e., no natural selection), random mating, and no migration. According to Hardy-Weinberg, the expected genotypic frequencies given the allelic frequencies above are  $p^2 = 0.16$ ,  $2pq = 0.48$ , and  $q^2 = 0.36$ . However, if the observed genotypic frequencies deviate significantly from Hardy-Weinberg expectation, then the population is in disequilibrium and there is evidence that the population is evolving. Additional research may identify which of the assumptions of Hardy-Weinberg are violated and thus provide insight into the mechanisms of evolutionary change in the population. If, for example, there are significantly more heterozygous genotypes ( $2pq$ ) than predicted, students might hypothesize that some selective advantage accrues to individuals with the heterozygous genotype (e.g., heterosis or hybrid vigor).

#### Analysis of Quantitative Arguments.

Students learn to interpret various kinds of graphical information (histograms, line graphs, scatter plots, etc.) and to draw conclusions from the data presented. In the example above, a series of histograms showing changes in genotypic frequencies in a population over a series of years would effectively make the case for evolutionary change at the genetic level. Lectures emphasize issues of sample size, and the reliability of conclusions based on various sample sizes. Other potential sources of bias are considered, such as results based on research funded by entities that have a vested interest in the outcome of the research (e.g., medical trials funded by pharmaceutical companies).

#### Application of Quantitative Models.

The catchphrase “If you don’t quantify, you don’t count” is more than a humorous play-on-words. In the absence of quantification, many assertions are little more than unsupported conjecture. Therefore, students are introduced to methods of quantitative analysis. They calculate values, evaluate the validity of data sets, and derive conclusions from the analysis of numerical data. They calculate Hardy-Weinberg expectations given various allelic frequencies, and they speculate on possible explanations for the various departures from Hardy-Weinberg equilibrium. These quantitative skills are applicable to real-world situations. For example, learning genetic terminology and solving genetics problems, allows students to gain a better understanding of their own genetic make-up, they will be better prepared to understand current advances in genetics (e.g., CRISPR), and they will have a more thorough understanding of information obtained about their genetic endowment from companies such as 23andMe.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local***

## ***and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

### Sustainability and the Natural and Human Worlds

In this course students learn the fundamental properties of life common to all organisms, including our species, and they come to appreciate the fact that the resources necessary to sustain life are finite. Because this course covers the basics of chemistry and biological molecules, students come to appreciate the chemical basis of living systems, and why clean water and a balanced diet free from pesticides are important for a healthy life. Through an understanding of human biology, students learn of the impact that humans are having on the environment and how that impact can affect the quality of their lives. As an example, while learning about the basics of chemistry and unstable molecules, we discuss the harmful mutagenic effects of ozone on human health, when inhaled, but also the benefits of the ozone layer in the upper atmosphere, which blocks much of the sun's deleterious radiation. Understanding the instability of ozone as a reactive molecule allows students to develop a deeper understanding of the importance of the ozone layer, and how humans have the potential to destroy it further or to help it to recover, to the benefit of all life on earth.

### Ethical Reasoning

Acquiring the knowledge and understanding that comes with education allows students to become better-informed citizens, capable of interpreting and evaluating the information to which they are constantly exposed. This, in turn, allows them to make well-reasoned decisions concerning the important issues of our time. In this course students learn the fundamental basics of genetics, which then allows them to participate in discussions of such controversial topics as the usefulness of genetic testing, the results of which may, in some cases, prove to be beneficial, but which may also have unethical consequences. In discussing DNA and heredity, we consider the ethics of so-called designer babies and the ramifications that such genetic manipulations may have for the evolution of our species. In discussing evolutionary processes, students also learn how antibiotics work and how they are often misused. They come to understand that the promiscuous use of antibiotics has the potential to affect us all, as those medications select for the evolution of antibiotic-resistant bacterial strains. The course also addresses the issue of vaccines – what they are, how they are used, and how important vaccinations are, not only for those receiving them, but also for those whose immune systems are compromised. By discussing these and other controversial biological subjects, students are exposed to a variety of perspectives, some of which may deepen their understanding of the issues, and allow them to better appreciate their importance, and perhaps cause them to re-evaluate their positions with respect to these

vexing problems.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f:/g/Curriculum%20&%20Instruction%20Committee/EJEtxsUi0CJHkV5-rKUrPnEBVUkNjaJPSJAaorjVJhNqiW?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 20 2019



#### **Upload Assessment**

**Completed** - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### **3- BIOL 2644-2644L Animal F F Diversity -Asse Ex -WNMU**

**Filename:** 3-\_BIOL\_2644-2644L\_Animal\_F\_F\_Diversit\_rd3zPSk.pdf **Size:** 356.8 kB



#### **Upload Rubric**

**Completed** - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### **2- BIOL 2644-2644L Animal F F Diversity -Syllabus -WNMU**

**Filename:** 2-\_BIOL\_2644-2644L\_Animal\_F\_F\_Diversit\_zv2jfdq.pdf **Size:** 131.1 kB

### **Application: 0000000080**

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



## Application Form

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### Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

### Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

#### Contact Information

Name	Katherine Goad
Title	Professor of Biology
Phone	5754922818
Email	kgoad@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	BI
Number	224A
Title	Human Anatomy and Physiology
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	BIOL
Number	2225C
Name	Huan Anatomy & Physiology II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

**Lecture Student Learning Outcomes:**

1. Identify and describe the major anatomical features of the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems.
2. Analyze the physiological roles of the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems in maintaining homeostasis in the human body.
3. Explain how fluid and electrolyte balance is maintained in the human body.
4. Compare and contrast the anatomy and physiology of male and female reproductive systems.
5. Describe pregnancy from conception to parturition including human growth and development from zygote to newborn.
6. Explain heredity and genetic control.

**Laboratory Student Learning Outcomes:**

1. Apply the scientific method correctly.
2. Collect, analyze, and interpret scientific data.
3. Use laboratory equipment, such as a microscope, correctly and safely.
4. Identify the anatomical components of human tissues, organs, and organ systems using prepared microscope slides, models, diagrams, illustrations, or cadaver specimens.
5. Describe the functional characteristics of human tissues, organs, and organ systems using prepared microscope slides, models, diagrams, illustrations, or cadaver specimens.
6. Analyze the physiological processes of the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems.
7. Analyze the physiological processes of fluid and electrolyte balance and acid base balance in the human body.
8. Analyze heredity and genetic control.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

The concept of scientific inquiry is primarily reinforced throughout the semester with laboratory activities. This strengthens students' ability to critically think via problem-solving assignments. The majority of laboratory activities throughout the course require students to evaluate information and to draw conclusions. Evaluation of students' critical thinking skills is performance based. Examples of laboratory activities that require problem-solving skills are the following:

- Lab 24: ID of Food types - Students apply the scientific thought process to identify various foods based on texture, taste, and/or smell.
- Lab 25: Case studies - Students identify the type of hormone imbalance based on information provided.
- Lab 26: Blood - Students observe via microscopy different types of leukocytes and conclude which category they belong based on evaluation of cellular morphology; Students determine blood types of unknown samples based on serological testing; Students interpret results from a complete blood count to predict possible diagnosis.
- Lab 37: Urinalysis - Students collect data from unknown urines using dipstick technique. They are to determine which results are abnormal and predict possible diagnosis.

Additionally in the lecture component, case scenarios dealing with acid-base balance are assigned. From the data provided, they are to determinate the type of imbalance (respiratory or metabolic) and whether the body is compensating or not. Critically thinking questions are also embedded within exams.



**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

The concept that students need to be able to communicate conclusions drawn from interpretation of quantitative data and to relevantly apply this information to real world is primarily stressed in the laboratory component. Assessment of the students' skill level is by performance on lab reports. Examples of laboratory activities used to strengthen students' quantitative analysis skills include the following:

- Lab 23 – Tactile: Students use two- point discrimination to determine concentration of sensory receptors in four areas of the body, calculate the reciprocal, plot data on bar graph, and draw conclusions.
  - Lab 26 – Blood: Students directly measure hematocrit percentage based on whole blood and predict hemoglobin content in g/100mL.
  - Lab 28 – Cardiac Cycle: From an ECG, students determine the heart rate in beats/minute and calculate the cardiac cycle (length/second)
  - Lab 33 – Pulmonary Ventilation assignment: Students directly measure vital capacity, tidal volume, respiratory reserve volume in milliliters and calculate total lung capacity based on data collected.
- During classroom discussions, diagrams, charts, and graphs are analyzed throughout the semester and students' skill level evaluated on lecture exams. Examples of topics discussed are the following:
- Graded and action potentials graphs that represent change in membrane potential
  - Diagram used to describe distribution of dermatomes
  - Diagrams of sympathetic and parasympathetic autonomic system to represent organ innervation
  - Charts to summarize ABO blood group interactions
  - Interpretation of electrocardiograms to determine normal and abnormal electrical activity of the heart
  - Dissociation curves to show relationship between oxygen-hemoglobin saturation and temperature & pH

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The concept that students need to recognize personal and social responsibilities within our diverse world is particularly important in this course as many of the students are seeking a profession within a healthcare field. The lecture portion of the course provides opportunities to discuss cultural awareness topics such as:

- Effects of aging on body systems (e.g. nervous, special senses, endocrine, cardiovascular, lymphatics, respiratory, digestive, urinary, and reproductive)
- Impact of homeostatic imbalances on health and disease (see body systems above)
- Organ transplants and blood transfusions

Additionally, the laboratory component provides students an opportunity to hone their interpersonal communication skills, since they are required to work in teams for some activities. This allows students to work in a more diverse environment and also stresses the value of collaboration and peer learning.

Examples of exercises that require group effort are the following:

- Labs 19 & 22: Testing of somatic and autonomic reflexes (e.g. patellar, biceps, Achilles, pupillary light reflexes)
- Labs 23 & 24: Testing of general senses (tactile) and special senses (auditory, olfaction, & gustation)
- Lab 28: Performing ECGs and auscultating heart sounds
- Labs 29 & 31: Modelling of major blood vessels & lymphatic vessels
- Lab 33: Measuring lung volumes and capacities

Evaluation of this essential skill is performance-based (e.g. laboratory reports and lecture exam questions).

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 18 2019



### Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## Lab Exercise 23 Departmental Assessment

Filename: Lab\_Exercise\_23\_Departmental\_Assessment.docx.pdf Size: 331.7 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000014

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



### Application Form

Completed - Mar 5 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins
Title	Division Chair
Phone	5757694909
Email	don.scroggins@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Math

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

## Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	MATH
Number	111
Title	Trigonometry
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	MATH
Number	110
Title (if applicable)	College Algebra

## New Mexico Common Course Information

Prefix	MATH
Number	1230
Name	Trigonometry

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will be able to define and evaluate the trigonometric functions as functions of angle in both degree and radian measure using the definitions in terms of  $x$ ,  $y$ , and  $r$ ; as the ratio of sides of a right triangle; using the unit circle; using reference angles, commonly used ( $0^\circ$ ,  $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ ,  $90^\circ$ ) angles and using a calculator.
2. Students will be able to solve right triangles. They will be able to draw a sketch in an applied problem when necessary.
3. Students will be able to solve non-right triangles using the law of sines and the law of cosines.
4. Students will be able to prove trigonometric identities and apply addition and subtraction, double-angle, half-angle and power reduction formulas.
5. Students will be able to graph the six trigonometric functions, their transformations and their inverses.
6. Students will be able to use algebraic methods, including the use of identities and inverses, to solve trigonometric equations and demonstrate connections to graphical and numerical representations of the solutions.
7. Students will be able to add and subtract vectors in two dimensions. They will be able to use the dot product to project one vector onto another and to determine the angle between two vectors. They will be able to solve a variety of word problems using vectors.
8. Students will be able to work with polar coordinates; this includes graphing in polar coordinates and transforming an equation with polar coordinates into one with rectangular coordinates, and vice versa.
9. Students will be able to work with the trigonometric form of complex numbers, including using De Moivre's formula.

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Throughout this course, students must use a variety of media to learn and communicate. Students have an interactive e-text that has lecture videos, animation and interactive videos as well as interactive videos for them to learn terms and concepts of trigonometry, logical steps of problem solving in a trigonometric context and evaluation of possible procedures and solutions. Through these learning tools, students are educated on the many ways trigonometry appears in the world. Students also review topics and vocabulary from previous algebra courses upon which trigonometry builds. Homework and exams reinforce concepts through graphical, numerical and symbolic means. Students must be able to comprehend and apply learned methods, then communicate their findings appropriately. Students correspond via e-mail and an open discussion forum to ask questions and receive feedback (either from the instructor or their peers), which strengthens their ability to effectively communicate concepts of trigonometry in correct mathematical vernacular. . Assessment of these communication skills occurs via formal summative assessments, quizzes, and discussion forums.



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Across the semester, students learn through a variety of problem settings including, but not limited to, verification of trigonometric identities; determination of an unknown angle or distance involving obtuse or acute triangles by way of the law of sines or law of cosines; determination of size or location of an object via the Pythagorean theorem and other properties of right triangles; calculation of an area using Heron's formula or obtuse triangle formulas; and computation of linear and angular velocities of an object on a curved path. Students learn to demonstrate ability to organize important information given both explicitly and implicitly in each problem. Students also discern if given information is unnecessary to answer the question. Students then apply knowledge of learned methods and formulas for solution in order to choose one appropriate for the setting of the problem. Assessment of these critical thinking skills occurs via formal summative assessments and quizzes.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Throughout the semester, students learn to represent quantitative information through use of triangles, the unit circle, graphs of the six trigonometric functions, trigonometric formulas and equations, polar coordinates/equations and vectors.

Students analyze angles triangles to determine which formulas may apply (those for right triangles or for obtuse/acute triangles). Students analyze the periodicity of the unit circle and graphs of the six trigonometric functions in order to compute viable solutions over a specified interval. Additionally, they apply knowledge of trigonometric formulas to equations to facilitate the solution of those equations. Formulas may include but are not limited to Pythagorean identities, co-function identities, reciprocal identities, even-odd identities, product to sum, sum and difference, half-angle, double-angle, law of sines, law of cosines, Heron's formula and DeMoivre's formula.

Students analyze rectangular coordinates/equations to convert them into their polar equivalents, as well as correctly apply DeMoivre's theorem to trigonometric values in complex form. Assessment of these quantitative reasoning skills occurs via formal summative assessments and quizzes.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 5 2019



#### Upload Assessment

Completed - Mar 5 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### Sample Assessments for MATH 1230 Trig

Filename: Sample\_Assessments\_for\_MATH\_1230\_Trig.zip Size: 1.1 MB



#### Upload Rubric

Completed - Mar 5 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### MATH 111 Syllabus

Filename: MATH\_111\_Syllabus.docx Size: 33.6 kB

### Application: 0000000109

Daniel McLaughlin - dmclaughlin@navajotech.edu  
NM General Education Curriculum



#### Application Form

Completed - Mar 19 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Dean of Instruction

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	HUM
Number	170
Title	History of Native American in Media
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	HUMN
Number	1130
Name	Media and Culture

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Other - Choose 3 essential skills below

#### Choose 3 Skills

#### Responses Selected:

Communication

Critical Thinking

Personal & Social Responsibility

### B. Learning Outcomes

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Participate in a constructive conversation and community about media and culture. 2. Read and critically engage with a variety of media forms. 3. Compose media reviews and book reviews in the context of media and culture. 4. Seek proof of tutoring and feedback from peers about their work. 5. Revise written based on peer feedback and critique. 6. Reflection on students' own writing and writing process is essential to understanding how media and culture affects students' world view. 7. Evaluate and engage with the community about what has been revealed in the classroom.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students participate in question and answer sessions during class, thereby practicing the skills of active participation and open discussion. Students learn how different film genres affect their daily lives within their communities. Students read a wide variety of creative texts during the course, and are asked to write a media review based on the format and text in the Tribal College Journal Media Reviews. Students practice strategies for understanding and evaluating films and media reviews and they learn how to express their ideas and opinions verbally and in writing through assignments, class discussions, and question and answer sessions. Through subjective film responses students are allowed to express their emotions and opinions while writing in an academic format (e.g. Eighth Edition MLA, five paragraph film responses and TCJ Media Review book assignments and well as verbal expressions with classmate and the professor), students gain skills and confidence to communicate in diverse environments.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

This course focuses on students' abilities to accept the truth of Native American/American Indian/Indigenous/Dineh free thought and spiritual expression. Through a media and culture lens, students are allowed to write freely about how the films affect their feelings and opinions. By writing subjectively, each and every student is ejecting past experiences into the paper they write in the course. Many of their negative feelings and emotions now have an outlet and there is an uplifting of their essence during this process. The films deal with the treatment of Native Americans in the film industry and by the federal government. The text books are selected to accentuate the films and Native American authors from across the continent are selected. Adaptation of book to film is also explored. Critical Thinking is the ability to question everything and the ability to think for oneself. This course was created so that students would have a path to clear their minds and begin to question why their thoughts, ideas, opinions and dreams matter.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

NA

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

This course is designed to give students an indigenous media and culture writing experience and an exposure to the cultures and literature of and/or about other Native Nations on the North American Continent. This course provides hidden and lost historical experiences which leads each student to his or her understanding of local and global cultural. Creative writing as a means of expression is also incorporated into the course. The combination of academic and creative writing produces a balance with Intercultural reasoning and intercultural competence. Students were required to submit their creative writing to the 2019 Tribal College Journal Writing Contest. Through collaboration within the classroom, their work was submitted on time. Many of the students commented that they had never written a poem, fiction or nonfiction story, but have now gained that valuable experience of civic knowledge and engagement. Students will participate in a co-curricular project by reading a textbook created by a Dineh author to a member of their indigenous community and writing a reflection essay on the experience. By using photography the student will produce an essay by reflecting on the actual photograph from the act of reading out loud with another human being. This will be submitted as their final project in the course.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

NA



#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

HUM170

Filename: HUM170.sample-assessment.docx Size: 20.3 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000131**

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	ENG
Number	223
Title	Survey of American Literature I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2610
Name	American Literature I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Recognize the traditions of American literature and their connection to issues of culture, race, class, and gender.
2. Demonstrate familiarity with a variety of major works by American authors.
3. Explore the various influences and sources of American literature.
4. Apply effective analytic and interpretive strategies to American literary works using academic conventions of citation and style.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Analyze selected historical texts, the social contexts of their origin and reception, and the lives of authors, and examine the connections and intersections.
2. Prepare and deliver examples of journal entries, poems, or other forms designed to imitate early American texts.
3. Engage in respectful and exploratory dialogue with peers.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will examine the various genres that are a part of early American literature and analyze how each form uniquely communicates about American life, culture, and ideals; this may include how those genre contrast with reality or each other across the semesters. Students will also read and analyze rhetorical texts of early America and contextualize those arguments within the politics and social events of the times; students will also connect and contrast those American rhetorical texts with styles and arguments from other regions, like contemporary Europe. During class discussions, research, and writings, students will learn to analyze, reflect, compare, and contextualize literary forms and devices associated with American texts throughout the semesters. They will also learn about American authors' lives and the influence of politics, culture, religion, history, gender, race, and local geography upon works. Students will analyze works of similar nature but produced in different eras, and learn to contrast and contextualize those works. Students will encounter human commonalities as expressed in literary works and be asked to draw connections to their own lives and the current cultural, material and psychological circumstances of those lives. Students will be required to participate in civil discourse about their readings, expressing themselves with kindness and respect for one another and readers, through class discussions, writing, and research.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses **2** of the components of personal & social responsibility. 200 – 300 words.*

Through readings, reflection, discussions, and creative engagement, students will explore individual and social behavior and discourse across the semesters. Students will examine literature as personal and social discourse and the causes and effects of said discourse in social and political settings. Students will engage in respectful observation, analysis, and discussion of literary and critical works. Students will explore the personal and social possibilities presented by literary works and reflect upon those, applying ideas and perspectives on their own lives, enabling them to understand new options and consider changes to their own personal and social behavior. Through readings, discussions, and writing assignments, students will engage with the human behavior and experience of the many different eras and places of those human literary endeavors. Such engagement will empower them to analyze the way cultural discourse and social forces have shaped human behavior over time.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses **3** of the components of digital literacy. 200 – 300 words.*

Across the semester, students will become familiarized with CCC's online academic data base to conduct reliable and credible research for their discussions and papers. Students will be exposed to Ebscohost, Proquest, and they will access our online literary publication that is student driven, Palabras. Students will also grow in their knowledge on how to work within Canvas, our online platform, and how to submit videos and other materials needed for success in our class. Students must select sources based on credibility and use, and think through complex situations in areas such as structure, clarity, and organization. Students will also be re-introduced to the concept of primary versus secondary sources to be able to discern what sources are credible and appropriate for their research papers.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

N/A.

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

ENG 223-ENGL 2610 Rubric and Syllabus

Filename: ENG\_223-ENGL\_2610\_Rubric\_and\_Syllabus.pdf Size: 213.1 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000142**

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

Application Form



The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Larchinee Turner
Title	Professor of Biology
Phone	575-492-2811
Email	lturner@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	BI
Number	124
Title	General Biology II
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	BI
Number	124L
Title (if applicable)	General Biology II Lab

## New Mexico Common Course Information

Prefix	BIOL
Number	1111C
Name	General Biology II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Upon completion of this course, the students should be able to (but not limited to) the following:

1. Describe the scientific name used for classifying organisms and explain its importance.
2. List the 8 taxons used in the taxonomic classification system AND demonstrate its use.
3. Compare and contrast organisms found in the different domains/kingdoms and cite examples.
4. Describe the general structure & replication cycles of viruses.
5. Name the general shapes of bacteria and correlate their cellular structures with their functions.
6. Discuss how bacteria reproduce and the three mechanisms that genetic variations are generated.
7. Explain how prokaryotes differ with respect to acquiring nutrition & needing oxygen.
8. Discuss the environmental importance of prokaryotes.

9. List examples of diseases caused by microbes & discuss methods that are used to control outbreaks.
10. Discuss the basic characteristics of organisms found in the kingdom Protista.
11. Name AND give examples organisms found in the three different groups of Protista.
12. Discuss the basic characteristics of Fungi.
13. Differentiate fungi based on their spore-producing sexual reproductive structures and give examples of each.
14. Discuss the ecological, economic, and medical importance of fungi.
15. List the basic characteristics of plants.
16. Compare and contrast the life cycles of non-vascular plants, seedless vascular plants, and seed vascular plants.
17. Contrast the following: sporophyte & gametophyte generations, meiosis & fertilization, and angiosperm & gymnosperms.
18. Discuss the basic differences used to distinguish monocots from dicots (eudicots).
19. List the three major vegetative organs found in plants and state the basic functions of each.
20. Discuss the basic function(s) of the following tissues: ground, vascular, epidermal, & meristem
21. Draw a non-woody dicot root & stem cross-section and label the following: vascular bundle, vascular cylinder, endodermis, epidermis, cortex, pith, xylem, & phloem
22. Draw a monocot root & stem cross-section and label the following: vascular bundle, vascular cylinder, endodermis, epidermis, cortex, pith, xylem, & phloem
23. Draw a cross-section of a young woody stem and label the following: pith, wood, bark, cork, primary xylem & phloem
24. Draw a longitudinal section of a root tip and label the different zones of plant growth.
25. Draw a typical leaf cross-section and label the following: upper and lower epidermis, cuticle, stoma, palisade and spongy mesophyll, vein, xylem, and phloem
26. Briefly explain the mechanism of water transport according to the cohesion-tension model.
27. Briefly explain the flow of phloem according to the pressure-flow model.
28. Define the terms girdling and guttation and denote what process is responsible for each.
29. Draw/label a flower and differentiate between the female and male parts.
30. Distinguish between pollination and fertilization.
31. Differentiate between the seed germination and growth of a monocot and eudicot.
32. Discuss the general characteristics of animals.
33. Compare the 8 phyla of invertebrate organisms in terms of the following: body plan, symmetry, number of germ tissue layers, level of organization, and presence of coelom.
34. Describe the basic characteristics of the 9 phyla of animals studied and give examples of each.
35. Define the following terms: protostomes & deuterostomes, open & closed circulatory system, complete vs. incomplete digestive system, radial & bilateral symmetry, cephalization

36. Describe the amniote egg and discuss its importance from an evolutionary standpoint.
37. Discuss how birds are adapted for flight.
38. State the two body systems that are responsible for controlling behavior.
39. Distinguish between innate and learned behaviors and give examples of each.
40. Discuss social interactions/constructs used to reduce aggression within a society.
41. List examples of the different types of communication and state advantages/disadvantages of each.
42. Define the terms: population, society, community, ecosystem, and biosphere
43. Apply the Competitive Exclusion Principle as it relates to the niche and habitat of organisms.
44. Define mutualism, commensalism, and parasitism. Give examples of each
45. Discuss various defense mechanisms used by prey to avoid predation. Give examples of each.
46. Distinguish between primary & secondary succession and pioneer & climax communities.
47. Contrast the flow of energy versus nutrients through an ecosystem and discuss the role of decomposers.
48. Draw an ecological pyramid and denote which trophic level represents the following: producers (autotrophs), primary consumers (herbivores), secondary consumers (primary carnivores), tertiary consumers (top carnivores)
49. Describe the function of the reservoir, exchange pool, and biotic community in biogeochemical cycles and state three examples.
50. Briefly discuss the cause of the following ecological concerns: eutrophication, acid deposition, global warming, ozone depletion, photochemical smog, and organic chemicals along with possible biological magnification.
51. List the four basic tissue types found in animals and give a general function of each.
52. Explain the concept of homeostasis and give examples.
53. Distinguish between tissues, organs, and systems.
54. List the systems of the human body, the major organs of each, and the major functions of each.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem setting and problem solving will occur via scientific method applications and analyses of diverse organismal relationships. Throughout several learning modules, discussions will include the various domains and kingdoms of life, and descriptions of the characteristics of examples which henceforth places them into each group. Students will be assessed based on scenarios and taxonomic questions presented on lecture examinations. Disagreements with taxonomic categorizations are also discussed in lecture, and how new evidence or discoveries may change the categorization of life. Evidence acquisition and evaluation will occur during various weekly lab periods, where students are tasked with analyzing organisms using a set of procedures/tasks, and effectively collecting and applying scientific data to formulate accurate conclusions.

For example, students will use evidence in the form of anatomical structures or fossil imagery in order to ascertain the relationship between organisms, or create specific taxonomic groupings. Students will be assessed according to weekly, group-based lab quizzes in addition to questions presented on the laboratory midterm and final exams. Further evidence acquisition and evaluation will occur via laboratory tour of a local Waste Water Treatment Center, and an accompanying 5-paragraph essay on waste water treatment processes, the ecological impacts of waste water production and social responsibility.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

The communication of quantitative data will occur by presenting various scientific scenarios and data from the textbook and current literature, throughout several learning modules. Concepts will often be quantitatively represented during lecture discussions in the form of graphs, charts, and values which serve as visual aids. Particular examples of topics include: 1) cladograms and the divergence of physical traits, 2) competition between species for resources (competitive exclusion principle) and 3) identifying, comparing and contrasting the occurrences and frequencies of behaviors within animal groups.

Students will be assessed by the presentation of data and conclusions formed in lab reports during weekly laboratory sessions. Students will also create small groups to research and create a presentation regarding the characteristics, behaviors, and number of classes found within a particular animal phylum. During the lecture topic of behavioral ecology, students will individually form a hypothesis and analyze a case study related to individual and social primate behaviors. Students will be assessed in their ability to analyze and apply quantitative arguments via scenarios presented on exams. Weekly lab quizzes will also assess the application of quantitative models to form accurate conclusions about scientific data.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

This course will examine the impacts of ecological, physical and/or socio-cultural interactions at various levels of life. Lecture periods will examine and discuss sustainability between the natural and human worlds, over the course of several modules. Students will also apply collaboration skills, teamwork and intercultural value systems to research and create a presentation regarding the characteristics, behaviors, and number of classes found within a particular animal phylum. Intercultural reasoning is examined via discussions of animal behaviors and society, in addition to human roles within ecosystems. Students will explore sustainability, civic knowledge and social engagement via a field trip to the local Waste Water Treatment Plant. Students will be assessed via a 5-paragraph Waste Water Treatment essay.

Within the laboratory environment, students will work in groups in order to conduct laboratory exercises throughout the semester relating to comparative anatomy. This teaming approach provides students opportunities to work in a more diverse environment, along with emphasizing the value of collaboration. For example, students will collaboratively engage with one another analyze and discuss the importance, accuracy or reasoning of results found during experimentation. Evaluation of this skill is based on responses to weekly lab quizzes.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019





## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### BI 124 Assignment Example

Filename: BI\_124\_Assignment\_Example.doc Size: 30.2 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000140

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Sandy Thompson
Title	Professor of Biology
Phone	575-492-2816
Email	sthompson@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	BI
Number	144
Title	Biology II for Science Majors
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	BI
Number	144L
Title (if applicable)	Biology II for Science Majors Lab

**New Mexico Common Course Information**

Prefix	BIOL
Number	2610C
Name	Principles of Biology: Biodiversity, Ecology, and Evolution Lecture & Laboratory

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Lecture Student Learning Outcomes:

1. Understand the scientific method and apply it to biological topics of genetics, evolution, ecology, and biodiversity.
2. Apply quantitative reasoning and scientific thinking to real world problems.
3. Identify and describe the basic principles of evolution.
4. Analyze the relationships between the genetics of populations and evolution.
5. Analyze the processes of speciation.
6. Describe how the hierarchical classification scheme is used to categorize organisms.
7. Describe how DNA research has modernized bio systematics.
8. Compare and contrast the general characteristics of each of the living domains and kingdoms.
9. Relate the structure of organisms to the way they function.
10. Explain how the life histories of organisms are adapted for different environments.
11. Relate the complexity of behavior to the overall complexity of an organism.
12. Describe the ecological roles played by organisms in each kingdom.
13. Compare basic ecological principles at the population and community levels of organization.
14. Describe and compare energy relationships and the cycling of materials in ecosystems.

Laboratory Student Learning Outcomes:

1. Describe and apply the scientific method to generate testable hypotheses in evolution and ecology.
2. Design and conduct laboratory experiments using relevant laboratory equipment and methods.
3. Analyze and report data generated during laboratory activities and experiments.
4. Communicate scientific results from experiments in evolution, ecology, and biodiversity.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

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***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will perform various experiments using the scientific method on various topics including the evolution of bacteria, fungi, plants, and animals in order to address problem setting. Students will be assessed based on their dissection techniques and weekly quizzes. Students will evaluate the different lines of evidence of evolution and be given scenarios involving fictional creatures in order to evaluate their placement on a cladogram. Students will also be assessed with scenarios and taxonomic questions on the lecture exams. They will use the evidence that they are presented with to determine the relationships between organisms and create specific taxonomic groupings.

Evidence acquisition, evidence evaluation, and reasoning/conclusion will all be assessed in the form of a research paper that the students will have to write using peer reviewed articles over a current environmental issue of interest. They will need to research their topic and find and evaluate articles for their content and validity in order to determine if they are useful for their specific topic. Students will then write a research paper addressing their environmental issue and its causes, effects, and possible solutions. They will then present their paper to the class and defend their conclusions and possible solutions. Students will also visit the local waste water treatment plant and evidence acquisition and evaluation will occur in the form of an essay that they will be required to write addressing both the ecological and social impacts of waste water treatment. Students will also be required to research and gather evidence and evaluate it on a specific animal phyla that they are assigned. They will then need to present their findings to the class. Students will be given a biome activity in which they will need to evaluate the objects that they have at their disposable and choose which five they will take with them and validate why they are taking them to the group while incorporating the resources that their given biome has to offer.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will be required to research a current environmental issue and analyze what the authors of the articles are saying in order to determine what articles to include in their presentation.

Communication/representation of quantitative information will take place when the students present their findings to the class. Analysis of quantitative arguments will occur when they defend their point of view on the topic. Application of quantitative models will occur when they suggest future directions that might be taken in order to help fix the environmental issue in question. Lecture topics will reinforce what they have learned and also present data on various topics in a quantitative form. Students will be given problems to solve using the Hardy-Weinberg equations as well.

Students will also be required to formulate a hypothesis regarding animal behavior and then collect data and construct a graph to try to support their hypothesis during the behavioral ecology section. Students will analyze a case study looking at innate versus learned behaviors and be assessed via a worksheet. Students will also be assessed via scenarios presented on exams to test their ability to analyze and apply quantitative arguments. Students will demonstrate the difference between logistic growth and exponential growth during the population ecology section. They will also have problems to solve involving different populations according to their intrinsic growth rate. They will be assessed via worksheets and quizzes in lecture.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The students will be exposed to different levels of ecology and how humans impact these various levels. They will assess the ethics behind decisions that are made regarding human interactions with the ecosystems. They will research and write a paper regarding a current environmental issue to work towards a more sustainable future for our planet. They will then present their findings and possible solutions to expand their civic knowledge and become engaged in sustainability and help others become aware of the issues. Students will look at the cultural differences in attitudes towards sustainability and human impact in both the natural and human worlds.

Students will use their collaboration skills in both lecture and lab forming groups to work with weekly. They will visit a waste water treatment plant to learn about conservation and sustainability and be required to write an essay incorporating what they learn. The field trip is designed to increase their civic knowledge and engagement in civil discourse not only on the local level but expanding it to a global level. The students will look at biodiversity and its relation to sustainability during the ecosystem ecology section which will be expanded to biomes and the planet itself. Each student will have assignments as part of their group to work on so that they can then come together and collaborate and show teamwork to put together their final projects. Working in teams allows the students to be exposed to diversity and will help them build their skills in intercultural reasoning and competence.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019





## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Sample assignment BI144

Filename: Sample\_assignment\_BI144.doc Size: 30.2 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000083

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	English

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

## Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	EN
Number	213A
Title	Survey of British Literature I
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2630
Name	British Literature I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Read and discuss representative works of British writers from its origins in Old English to the 18th century to understand cultural and historical movements which influenced those writers and their works.
2. Identify the characteristics of various British literary genres, such as the essay, novel, short story, poetry, and dramatic literature.
3. Apply effective analytic and interpretive strategies to British literary works using academic conventions of citation and style.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting: Instructors provide instruction on critical thinking skills related to reading, writing, and research throughout the course. Students analyze readings, including fiction, poetry, plays, and nonfiction. With guidance from the instructor, learners engage in dialogue to interpret the readings while also discussing the cultural and historical significance of the texts.

Evidence Evaluation: Instructors show students how to gather professional evidence from peer reviewed sources and emphasize use of materials from a library over use of popular sources gathered through a search engine. Students use secondary sources as evidence in analyzing primary sources (works of literature) in a research paper.

Reasoning/Conclusion: Students use support and evidence from primary and secondary sources to defend a thesis statement while avoiding common logical fallacies. Students also practice critical analysis by commenting on each other's rough drafts for essays and the research paper.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students can identify and analyze personal and social justice issues in a variety of texts, including a diversity of social and cultural contexts.

Ethical reasoning: Students analyze texts for ethical thought and action, including individual actions of characters and separating individual character thought and action from the commentary and thematic implications offered by the text as a whole. Students discuss literature as a social activity that reflects, promotes, and critiques values while comparing and contrasting these perspectives with belief systems currently operating in the world.

Collaboration skills, teamwork and value systems: Instructors provide students with local opportunities to interact

and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments. Instructors provide students with local opportunities to interact and work on teams. Examples of teamwork include online discussions, in class group work, and peer review of rough drafts for writing assignments.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: The research paper in this course is the centerpiece assignment and is worth a minimum of 30% in all sections. Instructors present students with lessons on finding, evaluating, and citing sources in analytical and argumentative writing. Avoiding plagiarism through ethical use of sources and citation is a key topic.

Instructors require the use of professional sources from reputable publishers and peer reviewed journals. Student work is evaluated for ethical use of sources with Turnitin. Instructors offer guidance on interpreting Turnitin reports to help students responsibly and ethically cite sources.

Digital Literacy: Classes discuss the value of using library databases over search engines like Google for academic research. Students submit several scaffolding assignments as they prepare their reports, including a topic proposal, an annotated bibliography, a bibliography, and a rough draft. Students use digital tools, including word processors, email clients, the internet, and the Canvas LMS to complete assignments and communicate with their instructor and peers.

Students receive feedback from the instructor and their peers on the rough draft before submitting the final draft of the research paper.

Information Structure: Students practice paraphrasing and summarizing information from professional secondary sources. Students integrate multiple primary and secondary sources into a research paper structured around a developed thesis statement and topic sentences in MLA format.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided adequate evidence for analysis of the literary work in question.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 18 2019



Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### Research Paper

Filename: Research\_Paper.docx Size: 17.1 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000115**

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



Application Form

Completed - Mar 19 2019

#### Application Form



The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Math, Engineering, & Technology

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	MTH
Number	162
Title	Calculus I
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	MATH
Number	1510
Name	Calculus I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Limits a. Use limit notation. b. Compute limits or determine when a limit does not exist. c. Use limits to decide if a function is continuous. d. Use limits to decide if a function is differentiable. e. Use limits to determine asymptotes. 2. Derivatives a. Determine the derivative of a simple function, at a point as well as more generally, using the definition of the derivative. b. Determine the derivatives of algebraic and transcendental functions using the General Power, Product, Quotient, Chain Rules, implicit differentiation and the linearity of the differential operator. describe the meaning of the derivative as a rate of change in a variety of contexts. d. Use derivatives to sketch graphs of functions with details showing critical points and their natures, inflection points, noting monotonicity, and concavity, connecting these to features found algebraically, such as intercepts and asymptotes. e. Compute local linear approximation. 3. Integrals a. Compute definite integrals using the limit definition and sigma notation. approximate definite integrals using finite sums. c. Compute indefinite integrals by identifying them with antiderivatives. d. Compute definite and indefinite integrals using substitution. e. Describe the meaning of the integral in a variety of contexts. 4. Applications of calculus a. Solve optimization problems, related rate problems and motion problems involving position, velocity, speed and acceleration using differentiation and integration. b. Compute area bounded by functions and vertical lines. c. Be able to apply theorems of calculus such as the Fundamental Theorem, the Intermediate Value Theorem, the Mean Value Theorem, the Mean Value Theorem of Integration, and the Extreme Value Theorem.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 - 300 words.*

In this class, students communicate mathematical ideas through both oral and written expression. They communicate mathematical findings in oral form through discussions in small groups, and in written form through assignments (in-class and for homework) and exams. For both oral and written forms, challenging problems involving applications of the theory of differentiation and integration are assigned. To successfully communicate mathematical findings in written and oral form, students are given time to work individually on the problems and write step-by step solutions. Then the students are asked to discuss their work on their group settings. Each group is asked to present a specific problem assigned by the instructor to be presented, and the instructor and a representative from each group leads the whole class group discussion. In summary, are able to communicate effectively through reading, writing, speaking and listening, prepare written documents in a professional manner, develop oral communication skills to present information in a professional and appropriate manner, and demonstrate appropriate listening skills in one-on-one and small and large group settings.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical thinking is reinforced by having students examine mathematical problems from different perspectives. It is assessed in on a weekly basis, depending on the lesson. For example, regarding “continuity and one side limit,” students are asked to verify the existence of the limit for continuity using approaches other than analytical, such as graphical and using tables, or within the scope of finding the limit analytically itself. Students must see that problems can be approached using different techniques but lead to the same solution, as when doing  $\lim_{x \rightarrow 1} \left[ \frac{(x-1)}{(\sqrt{x}-1)} \right]$

In other areas, students are given hands-on problems to solve. Examples include the following: A) Functions on the floor. Students place several axis systems on the floor using adding machine tape. They are provided with a collection of conditions on derivatives and second derivatives. They are also given jump ropes to create graphs with given derivatives. B) Optimization of a cereal box. Students create a box with the maximum volume by using one side of the cereal box and cutting squares out of the corners. Students compare volumes by filling their boxes with cereal.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

In this class, students apply mathematical skills appropriate to their programs of study. They analyze and solve mathematical problems needed in the workplace, daily life, and school, and interpret data using analytical methods. Students must be able to apply quantitative reasoning in numerical and written language to solve real-world problems involving optimization, motion, and problems. They must be able to communicate symbolically and quantitatively to find limits, differentiation, integration, and to graph functions. In general, students are trained to solve problems using a four-step process. First, students are asked to read the question several times and extract the information given. Second, they are asked what they can do with the given information. In other words, they are asked to devise a problem-solving plan with what they have. Third, they are asked to carry out their plan. Last, they are asked to go back and make sense of their solution.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 19 2019



#### Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

MTH162

Filename: MTH162.sample-assessment.docx Size: 26.0 kB



#### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000066**

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



#### Application Form

In Progress - Last edited: Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	janett johnson
Title	Div.Chair and Instructor
Phone	575-769-4753
Email	janett.johnson@clovis.edu



### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	English, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	ENG
Number	ENG 104
Title	English composition and Research
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	ENGL
Number	ENGL 1120
Name	Composition II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

### B. Learning Outcomes

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Analyze the rhetorical situation for purpose, main ideas, support, audience, and organizational strategies in a variety of genres.
2. Employ writing processes such as planning, organizing, composing, and revising.
3. Use a variety of research methods to gather appropriate, credible information.
4. Evaluate sources, claims, and evidence for their relevance, credibility, and purpose.
5. Quote, paraphrase, and summarize sources ethically, citing and documenting them appropriately.
6. Integrate information from sources to effectively support claims as well as other purposes (to provide background information, evidence/examples, illustrate an alternative view, etc.).
7. Use an appropriate voice (including syntax and word choice).

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Analyze communication through reading and writing skills
2. Employ writing processes such as planning, organizing, composing, and revising.
3. Express a primary purpose and organize supporting points logically.
4. Use and document research evidence appropriate for college-level writing.
5. Employ academic writing styles appropriate for different genres and audiences.
6. Identify and correct grammatical and mechanical errors in their writing.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will write research essays that require integration of outside, scholarly, academic sources. Sources must be properly cited in the essays as well as included on a Works Cited/References page across the semester. The research essays must include an articulate argument supported by relevant claims and expressed using clear sentences and logical sequencing of paragraphs. Additionally, students will evaluate a variety of texts among multiple genres including narratives, poetry, research essays and speeches in order to analyze effective persuasive writing (rhetoric) within various rhetorical situations. Students will further analyze rhetorical situations as they relate to specific texts by examining the writer, topic, purpose, audience and surrounding context/culture. Through a combination of reading and writing students will acquire skills that enable them to evaluate arguments, write arguments and respond to various societal and cultural topics. Through in-class discussions and literature analysis, students will acquire oral skills necessary to substantiate an argument and contribute to a variety of conversations.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Across the semester, during class discussions, research and essay writing, and basic research activities, students will learn to reflect, analyze, compare and contrast, and solve problems of diverse subject matters. These diverse subject matters include, but are not limited to, social, cultural, political, historical, and educational issues relevant to students from diverse backgrounds. Students will also learn to search for and analyze credible sources from various resources—such as, the library databases, the library catalog, and/ or the Internet. They will also need to evaluate reliable sources to determine if the sources meet scholarly requirements based on currency, reliability, authority, and purpose and point-of-view. Students must properly analyze sources to determine how to integrate them to support the thesis and underlying arguments, observations, ideas, solutions, etc of their research essays. Furthermore, students will learn to distinguish between academic sources, fake news, and popular sources (e.g., Wikipedia, blogs, news Websites, etc.), and will learn to recognize which sources are appropriate for academic writing contexts. Through a combination of reading, writing, class discussion and research, students will be required to critically engage in critical civic discourse that recognizes the distinctions among opinions, facts, and inferences.

***Information & Digital Literacy. Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Students will continue to refine their skills through an exploration of the differences between academic sources, fake news, and popular sources (such as Wikipedia, blogs, news Websites, etc.) during the semesters. In addition, students will be exposed to the use of the library where they will explore the digital resources housed in the library's databases, such as e-Books, electronic articles, and electronic reference works. Through analysis and careful reading, students will learn the distinction between various types of digital sources including their various uses, advantages and disadvantages as they relate to argumentative writing supported by credible research. Furthermore, students will be introduced to fact-based support of their observations, claims, and thesis through academic research. Students will learn to use tutorial support, videos and speeches, found online, to refine the writing and revision process.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 19 2019



#### Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### ENG 104-ENGL 1120 Rubric

Filename: ENG\_104-ENGL\_1120\_Rubric.pdf Size: 441.6 kB



#### Upload Rubric

Completed - Mar 19 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### ENG 104-ENGL 1120 Syllabus

Filename: ENG\_104-ENGL\_1120\_Syllabus.pdf Size: 525.5 kB

### Application: 0000000196

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



#### Application Form

Completed - Mar 21 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Roene Neu
Title	Professor of Geology
Phone	575-492-2813
Email	rneu@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Science

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	GE
Number	124
Title	Historical Geology
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No



### Co-requisite Course

Prefix	GE
Number	124L
Title (if applicable)	Historical Geology Lab

### New Mexico Common Course Information

Prefix	GEOL
Number	2110C
Name	Historical Geology Lecture & Laboratory

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

### Lecture Student Learning Outcomes

1. List the major principles of stratigraphy and biostratigraphy and discuss their significance.
2. Recognize or explain how sedimentary rocks can be used to interpret ancient environments.
3. Recognize or explain how plate tectonics has affected the distribution of life, climate, and sea level.
4. Describe the process of Darwinian evolution.
5. Demonstrate a basic knowledge of biodiversity.
6. Recognize and explain taphonomy and the biases inherent in the fossil record.
7. Discuss the major mass extinctions recorded by fossil evidence including potential causes and organisms affected.
8. Compare relative versus absolute time and explain how geologists determine the ages of rocks, fossils, and the Earth.
9. Discuss the development of the geologic time scale.
10. Recognize or explain the history of life on Earth during major time periods and describe major biological innovations through time.
11. Recognize or explain the physical geologic evolution of Earth over time.

### Laboratory Student Learning Outcomes

1. Explain or discuss geologic time and how the geologic time scale was developed.
2. Recognize or explain how geologic time is measured.
3. Describe and use the basic principles of stratigraphy and explain how stratigraphy can be used to interpret sedimentary environments.
4. Describe and use the basics of paleontology and how fossils can be used to interpret ancient sedimentary environments.
5. Identify fossils in hand samples and explain how organisms are preserved in the fossil record.
6. Identify, explain, or interpret geologic structures on geologic maps.
7. Reconstruct the history of geologic events using geologic maps and cross-sections.
8. Construct cross-sections, fence diagrams, and isopach maps from stratigraphic sections and thickness data.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical Thinking skills are developed through classroom activities, homework assignments, and lab exercises. All labs require critical thinking skills in which students are required to make observations, this may be of fossils, rocks, minerals, diagrams, maps, and figures. They then use these observations to solve geological problems presented to them. An example of this would be with their lab on stratigraphic facies and physical correlations. Students are first required to construct a restored cross section using lithologic units and biostratigraphic information. Students are then to identify trends using the evidence seen in their correlations, followed by evaluation and conclusions on based on the evidence. Students are also asked if their correlation demonstrates Walther's law and present the evidence and their reasoning behind their conclusion.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning is essential in for solving problems in geology. Students focus on methods for quantitative data exploration and hypothesis testing with many of their lab assignments. Students are often required to use mathematical skills to analyze and interpret real-world quantitative information in the context of a geology to draw conclusions that are relevant to students in their daily lives. For example, students use these skills to interpret and understand deep time by calculating a metaphor of geologic time to their own age as Eicher did with a calendar year to assist students in understanding in a more concrete way the difference between 100 years and 1 billion years.

Students communicate or represent quantitative data through several means including graphing, modeling and even written discussions. Students analyze quantitative data to understand real-world problems. Students additionally use quantitative reasoning to determine the ages of rocks through the application of radioactive decay. For example, students calculate the absolute (numerical) ages of rock and other samples. Students are presented means to calculate ratios of parent to daughter materials in a sample which can be used, in combination with charts/graphs to determine number of half-lives. This data is then analyzed and used to make a final calculation of numerical ages of samples.

The use of quantitative analysis, models, and communication of this data is applied to weekly lab assignment. In classroom lectures/discussions diagrams, charts, and graphs are all analyzed and students understanding of the material is evaluated on chapter exams.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Personal and social responsibilities are large part of the course. Both lectures and lab involve discussion of our interactions with and impact on our planet from a geological context. Students by studying the geologic history of our planet become aware as concerned citizens of how fragile our planet is and how interdependent all of its various systems and subsystems are. Students are learning how small changes have influenced our planet and how those changes have influence the environment and life on this planet through geologic time.

In labs students work in pairs or small groups dependent on the day's lab activity, where they work on key skills like communication, collaboration, and teamwork. In lecture students partake in group discussions in the classroom, but also in our online learning system. Where students are assigned to post discussions on topics related to lecture, such as an introductory discussion on "Do events such as asteroid impacts, which suddenly and globally disrupt ecosystems and the stratigraphic record of a large area, invalidate the principle of uniformitarianism?"

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## SampleAssessmentHistoricalGeology

Filename: SampleAssessmentHistoricalGeology.pdf Size: 449.1 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000104

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



Application Form

Completed - Mar 19 2019

## Application Form

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Dean of Instruction

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	ENG
Number	155
Title	Creative Writing
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	ENGL
Number	2310
Name	Introduction to Creative Writing

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility



## B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Participate in a constructive conversation and community about creative writing. 2. Read and critically engage with a variety of texts. 3. Compose creative works in various genres of creative writing. 4. Provide respectful, honest, and critical feedback to peers about their work. 5. Revise creative work based on peer feedback and critique. 6. Develop thoughtful workshop reflection on students' own writing and writing process. 7. Evaluate and engage with publication process.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students participate in reading aloud during class, thereby practicing the skills of active reading. Students learn how different creative writing genres affect useful patterns of reading. Students read a wide variety of creative texts during the course, and are asked to analyze and discuss elements such as tone, voice, diction, syntax, etc. Students practice strategies for understanding and evaluating creative writing, and they learn how to express their ideas and opinions verbally and in writing through assignments, class discussions, and workshop sessions. Through different types of responses (e.g. verbal feedback to a classmate vs. written response turned into professor), students develop communication strategies appropriate for the situation (attending to audience, purpose, and context).

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

This course will focus on students' abilities to clearly express their thoughts as well as include an in-depth study of literary terms and mechanisms which will be applied to the writer's own work to foster improvement. These critical analysis skills can be applied to literary study outside the creative writing sphere. The process of creative writing, the crafting of a thought-out and original work, is an antecedent to creative problem solving. The work students do while reading and discussing texts involves analysis and evaluation rather than merely accepting ideas or information. Students learn how to understand relationships, similarities, and differences; look for patterns; classify and categorize; see trends and larger ideas; consider multiple perspectives; make judgments; and ask pointed questions.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Designed to give students a global creative writing experience and an exposure to the cultures and literature of and/or about other countries, this course provides critical exposure that leads to a clearer understanding of cultural preconception and experience with creative writing as a means of expression. Students become conversant with approaches, values, ideologies, and innovations that form the cultural context of creative writing today. In ways unique to creative writing, students are also asked to write texts from points-of-view other than their own. The workshop setting requires all students to be collaborative participants—reading the work of their peers and responding verbally and in writing. Students engage in active listening, thoughtful communication, and analytic discussion. Students work in small groups in the classroom, completing projects that culminate in a presentation or written document. Students also learn to participate in respectful dialogue that shares differing perspectives and thereby recognize that there are multiple valid responses to the texts we read in this course.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

ENG155



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000133

Mary Beth Atwood - atwood@nmml.edu  
NM General Education Curriculum



Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Mary Beth Atwood
Title	Professor
Phone	5756248140
Email	atwood@nmmi.edu

### Submitting Institution

Name of HEI	New Mexico Military Institute
Submitting Department	Natural Sciences

### Chief Academic Officer

Name	John McVay
Email	mcvay@nmmi.edu

### Registrar

Name	Christopher Wright
Email	wright@nmmi.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	BIOL
Number	1154
Title	General Biology
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	BIOL
Number	1150L
Title (if applicable)	General Biology Lab

**New Mexico Common Course Information**

Prefix	(No response)
Number	(No response)
Name	(No response)

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate factual knowledge of the concepts, facts, and theories in the following areas of biology: concept of life, chemistry of life, cell structure and function, genetics, evolution by natural selection, history of life on earth, taxonomy and examples of living organisms (including archaea, bacteria, protists, fungi, non-vascular plants, vascular plants, invertebrate animals, and vertebrates), ecology and ecological issues.
2. Explain the scientific method and be able to apply the scientific method where appropriate.
3. Develop critical thinking skills when dealing with the current issues involving biological sciences to include medical, biotechnological and environmental issues.
4. Use appropriate equipment in a biology laboratory to perform demonstrations, conduct experiments, and develop observational and critical thinking skills.
5. Exhibit the learning skills necessary to succeed in the sciences as well as other disciplines.
6. Recognize and develop scientific responsibility to the natural world and society to practice science in an ethical and responsible, using all available data to attain and explain conclusions

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

At the conclusion of this class, students will be able to:

1. Demonstrate factual knowledge of the concepts, facts, and theories in the following areas of biology: concept of life, chemistry of life, cell structure and function, genetics, evolution and history of life on earth, taxonomy and examples of living organisms, human anatomy and physiology, behavioral responses, ecology and ecological issues.
  - 1.1. Know that all living systems are composed of cells and further understand the unifying characteristics of living systems.
  - 1.2. Know the importance of both water and the element carbon to cells and further understand that cells, have four important types of macromolecules (carbohydrates, lipids, proteins, and nucleic acids) that are each different in chemical properties
  - 1.3. Understand that both unity and diversity exist among cells
  - 1.4. Know that while all cells share basic features, there are different types of cells
  - 1.5. Know that within multi-cellular organisms, there are different types of cells and that these cells

perform different functions for the organism

1.6. Understand the process of cell division (mitosis and meiosis) particularly as those processes relate to the production of new cells and passing on genetic information between generations.

1.7. Know that in eukaryotic cells, the organization of DNA into chromosomes is key to both duplications and distribution of the genetic information to new cells or organisms.

1.8. Know that cells transform energy from one form to another through metabolic processes such as photosynthesis and respiration using ATP as the terminal energy transfer molecule

1.9. Understand the variety of mechanisms for transporting materials across a membrane, including diffusion, osmosis, and transport involving specialized membrane proteins.

1.10. Understand and be able to apply Mendel's laws of heredity

1.11. Understand how Mendel's laws relate to the movement of chromosomes to gametes during meiosis that lead to the increase genetic variation.

1.12. Understand the chromosomal basis of sex determination and genetic disorders.

1.13. Know the chemical and structural properties of DNA in heredity

1.14. Understand the relationships between DNA replication, RNA transcription, and protein translation

1.15. Understand how recombinant DNA technology allows scientists to analyze the structure and function of genes.

1.16. Know how DNA and protein sequences are used to infer evolutionary relationships among organisms

1.17. Understand that natural selection and its evolutionary consequences provide a scientific explanation for the fossil record, as well as for the striking molecular similarities observed among the diverse species of living organisms.

1.18. Know ways in which living things can be classified based on each organism's internal and external structure, their development and relatedness of DNA sequence

1.19. Recognize that organisms have behavioral responses to internal changes and to external stimuli.

1.20. Recognize the interdependence and interrelationships of organisms within an ecosystem

1.21. Be able to analyze abiotic and biotic interactions within the environment

1.22. Be able to trace the flow of energy through ecosystems from autotrophs to heterotrophs using energy pyramids, food chains and food webs

1.23. Be able to trace biogeochemical cycles involving carbon, water, nitrogen, and phosphorus

1.24. Identify the earth's natural resources and how they are affected by human intervention

1.25. Recognize national and global environmental challenges facing present and future generations

1.26. Know that multi-cellular organisms have a variety of specialized cells, tissues, organs, and organ systems that each perform specialized functions with focus on human systems

2. Explain the scientific method and be able to apply the scientific method where appropriate.



- 2.1. Identify questions and concepts that guide scientific investigations
  - 2.2. Design and conduct scientific investigations
  - 2.3. Use technology and mathematics to improve investigations and communications
  - 2.4. Formulate and revise scientific explanations and models using logic and evidence
  - 2.5. Recognize and analyze alternative explanations and models
  - 2.6. Communicate and defend a scientific argument
- 
3. Develop critical thinking skills when dealing with the current issues involving biology to include medical, biotechnology and environmental issues.
  4. Use the microscope and appropriate equipment in a biology laboratory to perform demonstrations, carry out experiments, and develop critical thinking and observational skills.
  5. Exhibit the learning skills necessary to succeed in the sciences as well as other disciplines.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion**

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Learning and utilizing the scientific method addresses all components of problem setting, evidence acquisition, evidence evaluation, and reasoning/conclusions. Various laboratory exercises are utilized in which different components are stressed. In some the problem is pre-set while in others the student is expected to recognize aspects of a problem. Techniques of accumulating evidence are discussed and decided upon with emphasis on gathering all data available. Evaluation of the data (evidence) is stressed from the standpoint of utilizing all data points and avoiding bias in all cases. Conclusions and the reasoning behind them evolve from class and individual discussion of data and analysis.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students analyze experiments conducted in laboratory exercises and develop quantitative models and arguments to support conclusions. They then use the available literature to compare their data with that of others and address any differences in conclusions due to approach or methodology. They are assessed by the presentation of data in their reports and assemblage of quantitative information and arguments contained in research papers otherwise assigned. Students will study the application of models across various topics, the compilation of such models and the absolute necessity of using all available data to construct them in order to avoid any inclusion or exclusion that would introduce bias into the completed model. Research papers, lab reports, and models will be critiqued among peers.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students in my classes work together as teams to carry out lab procedures, learn to use lab equipment, and to research current issues regarding sustainability of natural resources in a changing world with increasing population. Our school is very culturally diverse, so the interaction between students is invaluable. Current issues, such as pros and cons of vaccination, are discussed and classroom simulations of epidemics are carried out. We do another lab that demonstrates population growth and decline by different parental approaches as we study patterns of survival. We also examine how the world has changed to support a much larger population, with greater yields of crops and ways to water those crops along with all the modern methods of food preservation and storage. The approach is to give the students a positive but proactive approach to future issues. Locally, we examine issues such as possible ground water contamination by dairies and how that industry prevents contamination.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 19 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

sample Lab

Filename: sample\_Lab.pdf Size: 271.2 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000181**

Dianne Marquez - dmarquez@nmjc.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	HI
Number	213
Title	History of Civilization I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	HIST
Number	1150
Name	Western Civilization I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Students will be able to EXPLAIN in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries for the history of the western world from ancient times to the early modern era  
Bloom Taxonomy's Cognitive Process: REMEMBER AND UNDERSTAND
2. Students will DISTINGUISH between primary and secondary sources, IDENTIFY and EVALUATE evidence and EMPATHIZE with people in their historical context. Bloom Taxonomy's Cognitive Process: ANALYZE, REMEMBER, EVALUATE, CREATE
3. Students will SUMMARIZE and APPRAISE different historical interpretations and evidence in order to CONSTRUCT past events. Bloom Taxonomy's Cognitive Process: UNDERSTAND, EVALUATE, APPLY
4. Students will IDENTIFY historical arguments in a variety of sources and EXPLAIN how they were constructed, EVALUATING credibility, perspective, and relevance. Bloom Taxonomy's Cognitive Process: REMEMBER, UNDERSTAND, EVALUATE
5. Students will CREATE well-supported historical arguments and narratives that demonstrate an awareness of audience. Bloom Taxonomy's Cognitive Process: CREATE, APPLY
6. Students will APPLY historical knowledge and historical thinking "in order to infer what drives and motivates human behavior in both past and present. "Bloom Taxonomy's Cognitive Process: APPLY, ANALYZE

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students pose questions about the goals and purposes of studying the past in the context of specific historical events.

Evidence Evaluation:

Instructors provide instruction on critical thinking skills related to reading and writing throughout the course. Students analyze readings from primary and secondary sources by examining the evidence and reasons used by authors while also learning to recognize bias, motivations, historical influence, and interpretation, and how information or lack of information affects beliefs and written records.

Reasoning/Conclusion:

Instructors promote critical thinking skills related to reading and writing about Western Civilization. Students analyze various primary and secondary source documents/readings in order to describe and explain the developments of Western Civilization. Using various forms of evidence gathering, students practice evaluating evidence in the form of annotated bibliographies and virtual “museum exhibits” or poster presentations. Students practice using support and corroboration for their positions and addressing opposing views during scheduled class discussions, small group debates, live simulations, case studies, and discussion boards. Using Document Based Questions (DBQ) in unit exams, students will submit an essay that demonstrates their historic thinking skills by evaluating, explaining, and creating their narrative using the primary and secondary sources provided. Students further demonstrate these skills in both long and short essays that require persuasive and argumentative writing strategies. Instructors assess critical thinking skills using quizzes, activities, and essays with rubrics for each activity.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students read primary and secondary sources to engage in-class debates, discussions, and negotiations. Students work together in collaborative groups/factions towards common goals, as well as to achieve personal objectives. Students will research the various topics of the scenario to construct arguments, rebuttal potential opposition, and understand the historical background.

Ethical reasoning: Students examine the role of differing ethical beliefs in the context of American history: How are ethical beliefs from the past in dialogue with ethics today? How can knowledge of the past inform ethical decision making today? Is knowledge of the past necessary to engage in thoughtful ethical analysis. Students consider these and other questions in the context of specific historical contexts.

Collaboration skills, teamwork and value systems: Students demonstrate their understanding of personal and social responsibility by analyzing and critically interpreting significant primary texts, works of literature, music, art, and film and discussing the value systems expressed. Using art, architecture, and film, students will be able to compare and articulate the diversity of the human experience and expressions across periods and perspectives. Critical Film review and analysis that is coupled with peer reviews is one way this course assesses the students in this area. Students also utilize food history – cookbooks and private writings passed down through families and cultures – in order to better understand the diversity of culture and perspective. Primary source readings from various perspectives allow students the opportunity to demonstrate their abilities to evaluate credibility and relevance of source materials in order to obtain a multi-faceted understanding of the past. One way this course assesses these skills is through Document Based Analytical Essays, and the course uses reflective essays periodically as we move through the course.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Instructors use Library Resources to educate Students about the Library, its resources, and the benefits of using the Library to conduct research over generic search engines such as Google or Chrome. Standards and methods of MLA and APA formatting are presented and in multiple assignments students are required to gather and present their research according to those standards. Topics such as credibility, copyright, intellectual property and fair use are presented and discussed in preparation for the research assignments.

Digital Literacy: Produced with computers and electronic research resources, Annotated Bibliographies are compiled on topics both assigned and chosen in order to demonstrate the students' abilities to gather evidence from various sources, evaluate the credibility and relevance of source materials, summarize and order source materials correctly for research purposes. Gathering and summarizing multiple primary source readings from various perspectives allows students the opportunity to demonstrate their abilities to evaluate credibility and relevance of source materials in order to obtain a multi-faceted understanding of history.

Information Structure: Students present their group research in class and online for peer review, where multiple media resources are emphasized. Almost every course assignment or activity is assessed by the Instructor using a rubric with a component that addresses these skills.

Research as Inquiry: Students practice formulating research questions and suspending judgment until professional and credible sources have provided evidence.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



## Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## HI 213 Sample Assignment

Filename: HI\_213\_Sample\_Assignment.docx Size: 12.6 kB



## Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000229

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

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## Essential Skills

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1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning

3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel Peterman
Title	Full Time English Faculty
Phone	(505)224-4000 ext. 53007
Email	dpeterman@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	ENGL
Number	2520
Title	Film as Literature
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ENGL
Number	2520
Name	Film as Literature

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Develop an understanding of the cultural, historical, and technical contexts for various films.
2. Identify, define, and analyze basic film techniques used in different genres and time periods.
3. Analyze how film uses literature by studying different sources of adaptation.
4. Demonstrate an understanding of film in its various aspects by writing film analysis, reviews, and/or other projects.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

The attached assignment is an example of the ways in which this class meets the requirements for Communication as follows:

- Genre and Medium Awareness, Application and Versatility – ENGL 2520 is a literature class specifically focused on the medium of film and various genres within said medium. As such, one of the primary focuses of the class is understanding the features of film as a medium and how these are applied across a variety of genres to craft different kinds of stories and themes. The attached assignment helps develop this approach by asking students to perform a close analysis of a scene from a film, focusing both on the various techniques used to craft stories in film and literary elements to look at how a story is told within the film's genre conventions. This assignment comes after a number of assigned films have been watched, allowing students to understand the versatility within the medium and genre as well as requiring them to apply this knowledge in their analysis. This assignment is emblematic of the larger task of ENGL 2520.
- Strategies for Understanding and Evaluating Messages – As a representative assignment of ENGL 2520, this assignment and the class itself requires students to understand the various techniques film uses to communicate messages and to apply an understanding of these techniques in evaluating said messages. This assignment asks students to apply these strategies in not only understanding and evaluating these messages but allows them a vocabulary to communicate these to an audience in writing.
- Evaluation and Production of Arguments – The stated purpose of this assignment is “to take another, careful look at one of the films we have seen or will see this semester in order to appreciate how it was made and how it works.” At its heart, this assignment, and ENGL 2520 as a whole, is concerned with the evaluation of arguments through the close analysis of film as well as the production of arguments in terms of how the students construct arguments regarding a film's message, techniques, quality, and significance. Written assignments, such as this one, provide a structure that students must follow, while also forcing them to rely on their understanding of the subject matter to produce an appropriate argument.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The attached assignment is an example of the ways in which this class meets the requirements for Critical Thinking as follows:

- Problem Setting – Students must define a problem and develop a method with which to approach it through the selection of a particular scene from a movie and the need to understand how both the scene itself works and to also come to an understanding of how the scene contributes to the film as a whole. As such, students must have a deep enough understanding of the film selected to recognize a particularly significant scene while also then setting a plan to puzzle through how the various medium conventions are used to create the scene. Additionally, they must also account for literary techniques to understand the storytelling aspect better. This assignment, like others in the class, thus requires students to approach the task from the point of view of applying knowledge to a new situation and developing a way to work through a problem.
- Evidence Acquisition – Students have two primary ways to acquire evidence for this assignment – they must draw upon the various techniques and devices learned throughout the semester and they must draw upon specific examples from the film in question. Thus, when talking about how a scene is filmed or how music is used, for example, they must cite specific examples from the film while also selecting these samples as effective pieces of evidence to support their arguments.
- Evidence Evaluation – Students in ENGL 2520 will evaluate evidence in a number of ways, In an assignment such as this one, the evaluation of evidence is a primary task as students must closely examine a scene shot by shot and evaluate these shots for how well they support the assertions being developed in their argument as well as how the various techniques work. This requires a high level of critical thinking as students are both using these techniques to judge their evidence but to also craft their message based on the evaluation of evidence.
- Reasoning/Conclusion – The primary purpose of this assignment and similar assignments in ENGL 2520 is to reason through a scene from a film and to draw conclusions in regards to how the scene contributes to the film's overall message. This reasoning is based on skills and knowledge acquired throughout the course. As such, assignments build off of each other and students gain greater skill in both reasoning and drawing conclusions based this reasoning.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

The attached assignment is an example of the ways in which this class meets the requirements for Critical Thinking as follows:

- Intercultural reasoning and intercultural competence – Film is a worldwide medium that makes use of a shared set of techniques while simultaneously being shaped by the culture in which a film is created. This course and this assignment more specifically requires students to not only take into consideration how a film is made but how a director and others who work on a film tell a story. This requires students to not only engage with film as film but to reason through and gain a competence in how stories are shaped by the culture in which they're produced. Furthermore, while techniques are shared, the use of these techniques is often influenced by a film's place of origin. Thus, things like music, shot composition, lighting, etc., are likely to be used differently in films originating in different cultures, requiring students to obtain an understanding of and ability to discuss these cultural differences.
- Collaboration skills, teamwork and value systems - The assignment asks students to look at how a scene contributes to the larger development of a film in general and in doing so, they must take a variety of aspects into consideration: framing, camera work, lighting, sound, transitions, the choices made by actors as well as the costumes the actors are wearing, and the direction the actors receive from the film's director. In doing so, students become more aware of the collaborative nature of filmmaking. Literature is often framed as the work of a solitary creative mind, but close analysis of a film requires the depths of collaboration and teamwork at play. The actors and director must collaboratively make choices about performances. Both are working from a screenplay often written by someone else and must make decisions about how lines and dialogue are delivered. The director and photographers must use teamwork to compose shots. Both must also work with lighting technicians. In asking students to consider these various factors, students gain a greater understanding and appreciation for the level of teamwork and collaboration that goes into the successful creation of a film and the particular scene their paper is focusing on. These are skills focused on throughout the semester.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 22 2019



#### Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### Assignment for ENGL 2520

Filename: Assignment\_for\_ENGL\_2520.doc Size: 31.2 kB



#### Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### ENGL 2520 Rubric

Filename: ENGL\_2520\_Rubric.doc Size: 33.3 kB

## Application: 0000000036

Colleen Lynch - colleen.lynch@sfcc.edu

NM General Education Curriculum



#### Application Form

Completed - Mar 13 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Colleen Lynch
Title	Associate Dean
Phone	5054281769
Email	colleen.lynch@sfcc.edu

### Submitting Institution

Name of HEI	Santa Fe Community College
Submitting Department	Science

### Chief Academic Officer

Name	Margaret Peters
Email	margaret.peters@sfcc.edu

### Registrar

Name	Kathleen Sena
Email	kathleen.sena@sfcc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	PHYS
Number	1310
Title	Calculus-Based Physics I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	PHYS
Number	1310L
Title (if applicable)	Calculus-Based Physics I Lab

## New Mexico Common Course Information

Prefix	PHYS
Number	1310
Name	Calculus-Based Physics I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Describe the relationships among position, velocity, and acceleration as functions of time
2. Use the equations of kinematics to describe motion under constant acceleration
3. Analyze linear motion using Newton's laws, force, and linear momentum
4. Analyze rotational motion using torque and angular momentum
5. Analyze motion using work and energy

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Describe and apply the fundamental properties of waves, oscillations, and periodic motion

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem setting: In some labs, students have a task to test a hypothesis in a physical situation such as balancing torques. They state a hypothesis to set the problem they will solve (Appendix A).

Evidence Acquisition: In most labs, students acquire evidence experimentally, as by finding the position of a weight that balances other torques (Appendix A) or timing the period of a whirling mass (Appendix B).

Evidence evaluation: Students evaluate their lab results for accuracy and discuss possible sources of error (Appendices A, B). In some homework problems, students realize what information is irrelevant (Appendix C).

Reasoning/Conclusion: Students state conclusions based on their lab results (Appendices A and B). In homework and test problems, students determine what solution method to use (Appendix D). Also, in some homework problems, students answer conceptual questions, showing the reasoning that led them to their understanding of the physical situation in question.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information, Application of Quantitative Models: On homework and tests, students read questions and communicate answers using mathematical notation including units. They work the problems by applying quantitative models presented there and in class (Appendix D). These are the main assessments of the lecture course. They do the same with problems that arise in the labs (Appendices A, B). Also, on labs, students describe their procedures and express their results and conclusions (Appendices A, B).

Analysis of Quantitative Arguments: Students are given quantitative physics arguments and analyze them to determine whether they're correct or incorrect, and if incorrect, what the mistake(s) is or are (Appendix E).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: Students answer homework questions on global issues of sustainability related to physics, such as sources of energy (Appendix E).

Collaboration skills, teamwork, and value systems: In every lab, students work together, and in some, they reflect on their collaboration, addressing specific questions about division of labor and conflict resolution and how they could improve their teamwork (Appendix B).

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.sfcc.edu/quality/sfcc-essential-skills-outcomes/>



**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 10 2019



**Upload Assessment**

**Completed** - Mar 10 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**PHYS 1310 assignments**

**Filename:** PHYS\_1310\_assignments.pdf **Size:** 326.0 kB



**Upload Rubric**

**Completed** - Mar 10 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**PHYS 1310 rubric**

**Filename:** PHYS\_1310\_rubric.docx **Size:** 13.2 kB

**Application: 0000000136**

David Torres - davytorres@nnmc.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 21 2019

**Application Form**

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and

assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	David Torres
Title	Chair of Mathematics and Physical Science
Phone	5057472174
Email	davytorres@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Mathematics and Physical Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

### Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	PHYS
Number	121
Title	Applied Physics I
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	PHYS
Number	1230
Name	Algebra-based Physics I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate converting units and other aspects of dimensional analysis in the working of numerical problems.
2. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of particles in one and two dimensions.
3. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of a rigid body in two dimensions.
4. Apply Newton's theory of gravitation to circular orbits and demonstrate understanding of how Kepler's laws of planetary motion provide the empirical foundation for Newton's theory.
5. Apply the mathematics of vectors to the principles of Newtonian mechanics.
6. Apply principles of Newtonian mechanics to the case of static and dynamic incompressible fluids, including Archimedes's and Bernoulli's principles.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

No additional institutional-specific student learning outcomes are planned at this time.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

#### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

All the Student Learning Outcomes will be covered in the course through classroom lectures, activities, and homework. Student Learning Outcome 1. (Demonstrate converting units and other aspects of dimensional analysis in the working of numerical problems) will focus on the conversion between English and metric systems. Conversions will require students to set up the problem so units cancel. Critical thinking will be involved when converting units of area and volume and why the conversion factor needs to be used multiple times. Students can use dimensional analysis to check whether a formula seems reasonable (e.g. velocity multiplied by time is distance, acceleration multiplied by time is velocity, pressure times area is force). Student Learning Outcome 4. (Apply Newton's theory of gravitation to circular orbits and demonstrate understanding of how Kepler's laws of planetary motion provide the empirical foundation for Newton's theory) will require students to apply Newton's law of gravitation and define relationships between variables (force, mass and distance). Students will also have to explain using Kepler's laws why in an elliptical orbit a planet moves more quickly when near the sun and more slowly when distant from the sun, thereby demonstrating critical thinking

In this narrative, we will discuss Student Learning Outcome 2 (Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of particles in one and two dimensions) and how critical thinking needs to be used. Students will be required to gather information from the description of the two dimensional kinematic motion problem. Specifically the gravitational acceleration and the initial velocity in the x- and y-direction will need to be identified. The problem setting will need to be assessed and variables assigned by students before mathematical equations can be written and solved. The two dimensional kinematic problem requires students to use Newton's first and second law to determine the motion of a projectile without air resistance. Critical thinking and reasoning will be required to solve for the motion in the x- and y-direction separately. Motion in the y-direction is governed by Newton's second law ( $\text{Force} = \text{Mass} \times \text{Acceleration}$ ) and will determine how long the projectile is above the ground and moving. Students will need to construct a quadratic equation using the gravitational acceleration and the initial vertical velocity of the object (evidence acquisition). The quadratic equation will use time as the independent variable. Setting the quadratic equation to zero and solving for time will determine when the projectile will reach the ground. Finding the vertex of the quadratic equation will determine when the object reaches its maximum vertical height. These steps will require evidence evaluation. Students will then turn to the x-direction. Motion in the x-direction is governed by Newton's first law which states that an object will remain in motion unless acted upon by an external force. Thus the object will remain moving at constant velocity in the x-direction until it hits the ground. The distance traveled in the x-direction can be calculated by multiplying the initial horizontal velocity in the x-direction by the time the object remains above the ground. Again students will need to use evidence acquisition and evidence evaluation when applying these steps. Students will then need to summarize the motion of the object and explain the meaning of values extracted from the mathematical equations.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

All the Student Learning Outcomes will be covered in the course through classroom lectures, activities, and homework. Student Learning Outcome 5 (Apply the mathematics of vectors to the principles of Newtonian mechanics.) will require students to understand how vectors can be added and subtracted to compute the net force on an object. Quantitative reasoning will be needed to decompose vectors into different components and how each component can be analyzed separately. An object resting or moving on an inclined plane provides a perfect setting to analyze the forces on an object. Student Learning Outcome 6. (Apply principles of Newtonian mechanics to the case of static and dynamic incompressible fluids, including Archimedes's and Bernoulli's principles.) can be used to explain why objects exert a smaller downward force when immersed in a fluid. Students will be required to use quantitative methods involving the density of the fluid and volume of the object to determine the upward force due to buoyancy. Bernoulli's principle can be used quantitatively to show how an airfoil will create an upward force when moving through air.

In this narrative, we will discuss Student Learning Outcome 2 (Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of particles in one and two dimensions) and how quantitative reasoning needs to be used.

Students will need to construct a linear function and quadratic function that computes distance in the horizontal (x-direction) and vertical (y-direction) based on the initial vertical velocity and acceleration. These equations model the motion of the object exactly in the absence of air resistance. Information from the description of the problem will need to be extracted (initial horizontal and vertical velocity and gravitational acceleration), an independent variable (time) will need to be identified, and the independent variable will need to be used to form a function which defines quantity of interest (distance). Students will need to realize that acceleration needs to be incorporated in the vertical distance. In addition, students will need to realize that the vertical motion and its association function can be solved separately from the horizontal motion and its function. The models are fundamentally based on Newton's first and second laws. Students will need to understand that the quadratic and linear functions provide a tool and strategy to track a quantity of interest (distance) and describe the aspects of the quantity of interest. Students will be required to interpret and summarize the results of their computation in the context of the real world application.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Innovations in science and physics can at first glance seem to benefit society. However, the implications of innovations may not be understood immediately. For example, flight would not have been possible without an understanding of Bernoulli's law. However, while we are more interconnected than ever, we also are more susceptible to disease epidemics.

We will discuss the implications of Newton's laws in the context of traffic lights. Students can hone their collaboration skills by working together in teams. Intercultural reasoning and competence will be required to navigate through the controversy different perspectives bring to the problem. Students may need to research how other countries treat traffic lights. Students will need to use ethical reasoning when discussing the use of traffic light cameras.

Yellow traffic light time durations at intersections can vary depending on the speed limit and the slope of the road. Physics can be used to determine the minimum distance and time required to stop given a deceleration rate. Longer yellow light durations should be expected on roads where the speed limit is higher. Cities have some discretion when setting the duration of yellow traffic lights. Short durations of traffic lights can cause motorists to run a red light due to reaction time and can cause accidents for motorists who “slam on the breaks”. Longer durations will increase the time motorists spend waiting and have the potential to be abused if motorists believe they can drive through the intersection before they turn red. Students will be asked to decide whether short or longer durations of yellow lights should be used. They should support their argument by addressing safety considerations as well as human nature and habits. Students can also be asked to take a position on the use of traffic cameras at intersections.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/assessment-2/>



**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



**Upload Assessment**

**Completed** - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

**PHYS1230\_assessment**

**Filename:** PHYS1230\_assessment.docx **Size:** 99.7 kB



**Upload Rubric**

**Incomplete**

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000105**

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



**Application Form**

**Completed** - Mar 19 2019

## Application Form

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3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins/Larry Powell
Title	Division Chair/Adjunct Professor
Phone	5757694909
Email	don.scroggins@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	s

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	CHEM
Number	113
Title	Chemistry for General Education and Lab
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	n/a
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	CHEM
Number	1120C
Name	Introduction to Chemistry Lecture and Laboratory (non majors)

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Lecture Student Learning Outcomes:

1. Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements
2. Identify elements from their name or symbol. Use the periodic table to describe reactivity patterns of elements and to predict compound formation.
3. Describe the basic structure of an atom using subatomic particles, and apply these concepts to nuclear reactions.
4. Describe ion formation and the difference between covalent and ionic compounds. Name and write formulas for ionic and simple molecular compounds.
5. Write and balance chemical reactions. Use balanced reactions in stoichiometric calculations.
6. Describe the differences between the solid, liquid and gas phases. Use the gas laws in calculations, and apply these laws to everyday situations.
7. Explain different types of energy, and how energy is released or absorbed in a reaction
8. Describe acid and base behavior.
9. Explain the intermolecular attractive forces that determine physical properties; apply this knowledge

to qualitatively evaluate these forces and predict the physical properties that result.

10. Explain the intermolecular attractive forces that determine physical properties; apply this knowledge to qualitatively evaluate these forces and predict the physical properties that result

#### Laboratory Student Learning Outcomes:

1. Practice concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory-related calculations to include, but not be limited to determining the number of significant figures in numerical value, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Record quantitatively measured values to the correct number of significant figures and assign the correct units.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Draw appropriate conclusions based on data and analyses.
7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
8. Determine chemical formulas and classify different types of reactions.

Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.

#### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses **all** of the components of critical thinking. 200 - 300 words.*

Students learn critical thinking skills throughout the semester. Students use the Scientific Method to seek a solution or an explanation for a problem, collect information about the problem, articulate a hypothesis to address the problem, experiment to test the hypothesis to determine if it is correct while making detailed observations recording data, and evaluating the data to draw conclusions which may confirm the original hypothesis or lead to a reappraisal of the original hypothesis. Students are first given everyday situations (your car will not start this morning, that “can’t fail” recipe for a cake does not work, the wart on your hand will not go away) to gain confidence in the process and then use the Scientific Method throughout the semester in laboratory experiences. As part of their laboratory investigations, students construct hypotheses and draw conclusions for the results and reactions they observe. Examples: Why does a stream of tap water bend in the presence of a charged comb or balloon? What causes the leaves of an electroscope to repel? How can a voltmeter and an l.e.d. light be used to determine current in a citrus battery? Why do colors separate in a paper chromatograph? What reactions with copper are responsible for the creation of verdigris and the layering of copper on an iron nail? How does a Wint-o-green Lifesaver produce light when crushed? What is there about whole milk that can produce an immediate reaction with dish soap and how does that reaction differ from skim milk? In each example, students follow a procedure to produce a reaction and then must make careful observations to determine why the reaction took place and predict whether variations in the procedure would cause differences in results. Critical thinking skills are assessed with lab reports, quizzes, discussion forums, and formal exams.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

During the entirety of this course, students employ quantitative reasoning as they work with data and use formulas and equations to analyze information and apply models of quantitative applications to solve problems. Examples include: Metric values, conversions within and outside the Metric System, temperature conversions from Celsius to Fahrenheit and vice versa, mass and volume data to determine densities of substances, comparisons of the densities of different substances, assessments of the masses of subatomic particles, determination of the mass numbers of isotopes, electron arrangements of elements including electron configuration notations and electron dot notations, atomic masses of elements and the corresponding arrangement of elements on the Periodic Table, trends in atomic radii and ionization energy, ionic charges and compound formulas, formula masses and percent composition of compounds, balancing equations (composition, decomposition, and replacement reactions), predicting products when provided only reactants, using stoichiometry equations to determine values of knowns and unknowns, determining the amount of a substance in moles, ascertaining pH values of common substances, and calculating molarity of acids and bases.

In laboratory work, examples of quantitative reasoning include students estimating and then measuring the densities of common household substances (such as honey, liquid soap, water, vegetable oil, rubbing alcohol); estimating and then measuring specific items (such as personal height, arm length, neck circumference, shoe length door height) and then converting those values to units of meters, decimeters, centimeters and millimeters; writing balanced equations for reactions (such as “elephant’s toothpaste”, a reaction between hydrogen peroxide, yeast, warm water, and dish soap) ; using thermometers to determine temperatures of substances before during and after reactions(such as in the production of homemade ice cream); and determining pH values of common items (such as lemon juice, milk, glass cleaner, soap) using a red cabbage indicator.

Quantitative reasoning skills are assessed using lab reports, quizzes, and formal exams.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

A primary aspect of personal and social responsibility that students learn throughout this course are the safety guidelines for laboratory investigations. These guidelines include and are not limited learning how to use personal protective gear properly and the proper disposal of laboratory waste.

Additionally, students participate in discussions throughout the semester in which they submit their responses to discussion issues after having done research on the assigned topics and submit their reactions to other students' submissions as well. For example: Should the United States join almost every other country in the world and adopt the Metric System as the standard measuring system for commerce and everyday interactions involving measurement - not just in health fields and scientific research. What are the advantages and disadvantages of such a change? How would such a change impact daily lives, education, business, international relationships and trade? If the decision was up to you, on what side would you come down and why?

Another example: The Large Hadron Collider, located mostly in France with some cross- over into Switzerland, was built to uncover primary mysteries of matter, such as the Higgs Boson. The current estimate for the cost to build the LHC is around 6.5 billion dollars, with that cost consistently going up each year to maintain it. Many countries contribute a lot of money to keep the LHC working and to pay for new projects. Is too much money being spent on this project? Would it be better to spend this money and brain power to alleviate poverty and hunger or to find cures for diseases? The Higgs Boson has already been unveiled by the LHC. Should we call that good and divert that money elsewhere? Does it bother you that the LHC is located in France and Switzerland rather than in the U.S.?

Another example: The Canadian Environmental Agency estimates that over 50% of all sulfates deposited on Canadian soil come from U.S. coal fueled plants. Those same plants are also responsible for the creation of acid rain that also affects Canada's environment. What responsibility should countries that produce pollutants that affect their neighbors have? Should Canada just grin and bear it? Put yourself in a Canadian's shoes. Personal and social responsibility skills are assessed with discussion forums, quizzes, and formal exams.



#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Sample assessments CHEM 113

Filename: Sample\_assessments\_CHEM\_113.zip Size: 34.5 kB



Upload Rubric

Completed - Mar 19 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

CHEM 113 syllabus

Filename: CHEM\_113\_syllabus.docx Size: 28.3 kB

**Application: 0000000217**

A. BAILEY Pagels - pagelsa@wnmu.edu  
NM General Education Curriculum



Application Form

Completed - Mar 22 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Benjamin Cline
Title	Associate Professor
Phone	5755386207
Email	Benjamin.Cline@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	COMM
Number	1140
Title	Journalism and Mediated Comm
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

No

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	COMM
Number	1140
Name	Journalism and Mediated Comm

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Communications - Communication, Critical Thinking, Information & Digital Literacy

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for COMM 1140

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Students will be familiar with the history of mass mediated communication and its role in the development of current society. This will be evaluated in that one of the weekly mass media artifacts the students will create will be aimed at sharing this history.
2. Students will be aware of the democratic and anti-democratic social forces that are at work on the media industry. This will be evaluated based on several mass mediated artifacts that will be created by the students which focuses on these issues.
3. Students will understand and be able to implement the latest techniques in mass media design to an industry-expected level which will be evaluated based on the weekly construction of mass mediated artifacts that showcase the students' abilities.
4. Students will become better critical consumers of mediated communication. This will be evaluated by the creation of new media content which explores several social issues that are relevant to new media.
5. Students will be thoughtful producers of mediated communication. This will be evaluated by the thoughtfulness of weekly artifacts that they produce.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Students will be required to create several media including written reverse pyramid, AP (associated Press) style papers, academic media critiques, and newscast style videos.

1. Students would be required to create AP (Associated Press) style papers. The students will be evaluated on their ability to write in a manner appropriate to the genre of news writing (Genre and Medium Awareness). Students will be evaluated on their ability to place paragraphs in a reverse pyramid structure going from lead to detail (Production of Arguments).
2. Students will be required in a later assignment to adjust these stories to a video audience. The students will be evaluated on their ability to make appropriate alterations for a video newscast (Genre and Medium Awareness, and Application and Versatility).
3. Students will be required to write analysis papers examining both written and broadcast news stories. They will be asked describe the differences between these stories that are inherent to the medium (Genre and Medium Awareness). They will be required to analyze and evaluate messages for journalistic objectivity, styles, and newsworthiness (Strategies for Understanding and Evaluating Messages). They will be asked to find overt and latent arguments in news articles and to evaluate the objectivity/subjectivity with regard to news writing (Evaluation of Arguments).

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will be required to think critically to create several media artifacts including artifacts for both visual and print media.

1. Students will be required to write analysis papers examining both written and broadcast news stories. Students will be evaluated on their ability to work through articles from print and broadcast news sources to find the root philosophical differences between opinions difficult subjects (Problem Setting). They are evaluated on their ability to consider bias and journalistic objectivity in order to evaluate and present sources from a variety of different points of view (Evidence Evaluation). The students will be evaluated on their ability to find different news sources on the same subject (Evidence Acquisition). Finally, they will be required to logically prove a thesis from this evidence (Reasoning/Conclusion).

2. The students will be required to produce print AP (Associated Press) style articles. They will be evaluated based on their ability to collect information through web and library resources as well as interviews (Evidence Acquisition). The students will be evaluated on their ability to use reverse pyramid style in order to move from lede (most important subjects) to less important details (Evidence Evaluation). They will be evaluated on their ability to reason this information into an angle or hook-style thesis (Reasoning/Conclusion).

3. Students will be required to produce broadcast style news stories and record and edit them for video. They will be evaluated based on their ability to collect information through web and library resources as well as interviews (Evidence Acquisition). The students will be evaluated on their ability to use reverse pyramid style in order to move from lede (most important subjects) to less important details (Evidence Evaluation). They will be evaluated on their ability to reason this information into an angle or hook-style thesis (Reasoning/Conclusion).

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Students will be required to gather information from to create several media artifacts. Students will be required to write analysis papers examining both written and broadcast news stories. Students will be evaluated on their ability to find both print and broadcast stories on subject (Digital Literacy). They are evaluated on their ability to sort these sources based on objectivity and probably bias to evaluate sources as okay, good, or excellent sources (Authority and Value of Information). They will be required to logically prove a thesis from this evidence (Research as Inquiry). The students will be required to produce print AP (Associated Press) style articles. They will be evaluated based on their ability to collect information through web and library resources as well as interviews (Digital Literacy). They will be evaluated on their ability to sort through sources for relevance and reliability (Authority and Value of Information). They will be evaluated on their ability to place information reverse pyramid style in order to move from lede (most important subjects) to less important details (Information Structure). They will be evaluated on their ability to reason this information into an angle or hook-style thesis (Research as Inquiry). Students will be required to produce broadcast style news stories and record and edit them for video. They will be evaluated based on their ability to collect information (Digital Literacy). They will be evaluated on their ability to sort through sources for relevance and reliability (Authority and Value of Information). They will be evaluated on their ability to place information in reverse pyramid style in order to move from lede (most important subjects) to less important details (Information Structure). They will be evaluated on their ability to use this information to form a thesis (Research as Inquiry).

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtxsUi0CJHkV5-rKUrpNEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019





## Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### WNMU COMM 1140 Syllabus

Filename: WNMU\_COMM\_1140\_Syllabus.docx Size: 144.1 kB



## Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Journalism and Media Rubric

Filename: Journalism\_and\_Media\_Rubric.docx Size: 33.4 kB

## Application: 0000000261

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



## Application Form

Completed - Mar 26 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Science

### Chief Academic Officer

Name	Casmir Agbaragi
Email	cagbaraji@navajotech.edu

## Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

## Institutional Course Information

Prefix	PHY
Number	101
Title	Introduction to Physics
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	PHYS
Number	1111
Name	Survey of Physics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Apply concepts of classical mechanics (such as velocity, acceleration, force, inertia, momentum, torque, work, energy) to simple static and dynamic systems. 2. Apply concepts of thermodynamics (such as heat, temperature, internal energy, entropy) to simple processes. 3. Apply concepts of electricity and magnetism (such as fields, potential, charge conservation, static and dynamic induction) to simple circuits, motors, and other simple electrical contrivances. 4. Apply simple geometric and wave optics in simple situations.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

Introductory Physics aims to help students develop critical thinking skills in both theoretical and experimental physics. The students leave this course with a strong foundation in the scientific method. Critical thinking skills are developed through course readings, lectures, experiments, interactive online homework, and group problem solving activities. Students are evaluated according to the NMHED Critical Thinking rubric (see assignment-with-rubric below). Students also answer conceptual questions at each class sessions. These are short, critical questions from the textbook and made relevant to the students' here in a tribal college. As students participate in investigations within each chapter, they record data and complete written lab reports. Lab reports include the multiple sections that utilize scientific writing and critical thinking skills to present written analysis of laboratory investigations. Further, students complete a mini-project by forming a team of three students. They present their work in a ten minute presentation to the class.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning skills are developed through assigned readings, group problem solving, and laboratory activities. Students are expected to complete ten laboratory assignments. They solve math problems, solve equations, and produce interpretive graphs. Topics include kinematics, dynamics, energy, and rotation. Problems are assigned in class for interactive homework. The specific assessment used in this course (see below) is to have students work in groups to solve assigned problems in class. Students are also be evaluated to see if they have exceeded the benchmark level of the rubric adapted from the NMHED Quantitative Reasoning rubric.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Quantitative reasoning skills are developed through assigned readings, group problem solving, and laboratory activities. Students are expected to complete ten laboratory assignments. They solve math problems, solve equations, and produce interpretive graphs. Topics include kinematics, dynamics, energy, and rotation. Problems are assigned in class for interactive homework. The specific assessment used in this course (see below) is to have students work in groups to solve assigned problems in class. Students are also be evaluated to see if they have exceeded the benchmark level of the rubric adapted from the NMHED Quantitative Reasoning rubric.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

## Date

Mar 26 2019



### Upload Assessment

Completed - Mar 26 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHY101

Filename: PHY101.sample-assessment.docx Size: 23.3 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000245

Suzanne Balch - suzbal62@hotmail.com

NM General Education Curriculum



### Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

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2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
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4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Suzanne Balch Lindsay
Title	Asst VP Academic Affairs
Phone	575562314
Email	Suzanne.Balch@enmu.edu

### Submitting Institution

Name of HEI	ENMU Portales
Submitting Department	Physical Sciences

### Chief Academic Officer

Name	Jamie Laurenz
Email	jamie.laurenz@enmu.edu



## Registrar

Name	DeLynn Bargas
Email	DeLynn.Bargas@enmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

## Institutional Course Information

Prefix	PHYS
Number	152 P
Title	General Physics
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	PHYS
Number	152LP
Title (if applicable)	General Physics Laboratory

## New Mexico Common Course Information

Prefix	PHYS
Number	1240
Name	Algebra-Based Physics II I

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Be able to state Coulomb's Law and Gauss's laws and apply them.
2. Apply the concepts of electric charge, electric field and electric potential to solve problems.
3. Analyze simple DC and AC circuits.
4. Apply the Lorentz force to solve problems.
5. Apply Faraday's law of induction (and Lenz's law) to solve problems.
6. Apply ray optics to practical lens systems such as microscopes and corrective lenses.
7. Apply the wave nature of light to the phenomena of reflection, refraction, and diffraction.

Optional Topics (some schools include these in Physics I, others in Physics II):

1. sound
2. waves
3. heat
4. thermodynamics
5. oscillatory motion
6. modern physics

Optional Student Learning Outcomes

1. Describe the fundamental properties of periodic motion.
2. Explain and apply the basic concepts of sound and wave motion.
3. Explain the basic concepts of heat and thermodynamics.
4. Explain the basic concepts of quantum theory and special relativity.

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

Consistent with decades of pedagogical research by the physics community, critical thinking is fostered and assessed using conceptual questions in classroom discussions. Successful completion of a concept question requires

1. The interpretation and delineation of a problem in terms of fundamental physical principles.
2. Identifying the information provided and implied.
3. Evaluation of the relevance of each item of information.
4. The development of a line of reasoning that produces an answer/prediction specific enough to be wrong.

An accepted method of quantifying pedagogical success is the “gain”, defined as  $G = (S_f - S_i) / (100 - S_i)$  where  $S_i$  and  $S_f$  are pre and post scores in percent. Initial scores are collected in class via iClicker electronic polling. Selected conceptual questions addressing each SLO are presented prior to instruction. During the semester four paper exams are administered.

Each exam includes the selected conceptual questions, along with others. Gains are calculated for the selected conceptual questions. The selected conceptual questions are placed in groups according to SLO and gains presented as histograms. This guides the focusing of efforts in changing pedagogy from year to year as well as providing assessment of the current year.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

In analyzing conceptual questions students must interpret quantitative information expressed symbolically, graphically, and in written English. In addition, students identify appropriate mathematical models (based on physical principles) to represent quantitative information in these contextual problems. In many conceptual questions, a numerical data is provided in written and/or graphical format and students must apply those models to generate numeric predictions. An accepted method of quantifying pedagogical success is the “gain”, defined as  $G = (S_f - S_i) / (100 - S_i)$  where  $S_i$  and  $S_f$  are pre and post scores in percent. Initial scores are collected in class via iClicker electronic polling. Selected conceptual questions addressing each SLO are presented prior to instruction. During the semester four paper exams are administered. Each exam includes the selected conceptual questions, along with others. Gains are calculated for the selected conceptual questions. The selected conceptual questions are placed in groups according to SLO and gains presented as histograms. This guides the focusing of efforts in changing pedagogy from year to year as well as providing assessment of the current year.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students read Richard Feynman’s speech “Cargo cult science” describing characteristics distinguishing science from pseudoscience. Each student writes a short paper addressing a contemporary example of a product, practice, or other manifestation of pseudoscience. In writing the paper, the student contrasts how scientific standards of ethics compare to what suffices in other contexts. The implications for these differing ethical standards manifest themselves in the outcomes for society at large. For example, in some instances the financial or health implications for consumers will be demonstrated. In this way, students compare and contrast scientific and non-scientific ethical perspectives and resulting impact of the product, practice, or other manifestation.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

Pending

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 22 2019



Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

PHYS152-1240-AlgebraBasedPhysicsII ex assess

Filename: PHYS152-1240-AlgebraBasedPhysicsII\_ex\_assess.pdf Size: 247.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000106**

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



Application Form

Completed - Mar 20 2019

Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Marissa Juarez
Title	FT English Faculty
Phone	224-4000 ext. 52294
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### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	ENGL
Number	2640
Title	British Literature II
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No



## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	ENGL
Number	2640
Name	British Literature II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Read and discuss representative works of British writers from the 18th century to the present to understand cultural and historical movements which influenced those writers and their works.
2. Identify the characteristics of various British literary genres, such as the essay, novel, short story, poetry, and dramatic literature.
3. Apply effective analytic and interpretive strategies to British literary works using academic conventions of citation and style.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

None.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

In British Literature II, students will read and examine British literature from the 18th century to the present, and they will consider how these texts (including poetry, plays, essays, novels, and short stories) reflect aesthetic, cultural, and ideological debates central to British culture. Class discussions and lessons will engage students' reading of assigned literary works, and students will be largely responsible for posing questions and offering opinions and responses to each text. Essay exams and writing assignments present students with open-ended, exploratory questions related to British literature, and students must closely read assigned selections to address each question (see the attached Analytical Essay Assignment with rubric). In writing analytical research papers, students will support interpretations of British literature by citing relevant textual details, locating patterns and themes, noticing language choices, and considering the contextual factors that shaped the text's production. For research-based literary analyses, students will be asked to conduct secondary research related to the author's life, the text's socio-historical context, the corresponding culture, or associated literary movement; in so doing, students will evaluate the evidence gathered (determining the validity of sources and their relevance to the research topic). Through the process of analyzing literary texts, students will develop plausible interpretations that can be supported with the text and with other research. Instructors will evaluate students' critical thinking using the following criteria: the student's analysis is focused and presents a clear interpretation of the text; the analysis is supported with details about the text's language, patterns, themes, or ideas; the student writes in a coherent and accurate style; and the student cites sources appropriately using MLA style.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

In this course, students will broaden their understanding of later British literature, including its traditions and major authors; they will explore various influences and sources of these texts and examine the connections between literature and society. Students will gain skills in intercultural reasoning and intercultural competence by evaluating the social issues revealed in assigned texts and by considering how the ideas presented in these texts illustrate social dynamics in Britain and abroad. Students will compare and contrast British literary works to understand social and cultural relationships of the past, and they will be asked to consider how these relationships might compare to those of contemporary society. Further, students will consider how course texts have been informed by and have shaped views about British imperialism and colonialism, striving to understand the lasting effects of British conquest around the world. Students will gain skills in civic discourse, as well as local and global civic knowledge and engagement, as they participate in class discussions and compose blogs, analytical papers, or projects related to later British literature. Students will be asked to explore and draw conclusions from the cultural, historical, social, political, and economic factors that may shape a given piece of literature. Instructors will evaluate students' competency in personal and social responsibility based on how concretely students identify the social themes of an assigned text and how effectively students draw upon socio-historical details to support interpretations, opinions, and responses.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Reading, discussing, and writing about literary texts require students to consider the authority and value of information and to use this knowledge ethically when posing interpretations. During class discussions for example, students may be presented with a question about an assigned text or its socio-historical period; students must develop a response that can be supported both with details from the text and with contextual evidence, such as information about the time period or location in which the text was produced. Students will develop knowledge of information structures by studying later British literary texts; these explorations will aid students in recognizing how ideas and values are communicated through literary texts, as well as the insights these texts might provide about British culture, society, or history. Students will research various aspects of later British literature, from individual authors, to specific historical periods, social events, or literary movements. In analyzing assigned texts, students will consider a question related to a literary text or period, analyze and evaluate information, and synthesize the ideas gathered to pose an informed examination of British literature (see Analytical Essay Assignment with rubric). Students will also be asked to consider how they might relate themes of later British literature to other situations, including current day social issues and events. Instructors will assess students' information and digital literacy based on their inclusion of relevant and appropriate information and their competency in formulating a research question and arriving at an answer.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac/gen-ed-assessment-plan>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## ENGL 2640 British Literature Essay Prompt with Rubric

Filename: ENGL\_2640\_British\_Literature\_Essay\_Pr\_t4ZnT7v.docx Size: 13.5 kB



### Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## ENGL 2640 Rubric

Filename: ENGL\_2640\_Rubric.docx Size: 12.9 kB

## Application: 0000000145

Stephen Mathewson - smathewson@cnm.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning

3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Felecia Caton-Garcia
Title	Instructor of American Studies
Phone	505.224.3000
Email	fcatongarcia@cnm.edu

### Submitting Institution

Name of HEI	Central New Mexico Community College
Submitting Department	CHSS

### Chief Academic Officer

Name	Sydney Gunthorpe
Email	sydney@cnm.edu

### Registrar

Name	(No response)
Email	(No response)

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

(No response)

**Institutional Course Information**

Prefix	AMST
Number	1140
Title	Introduction to Race, Class, & Ethnicity
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	AMST
Number	1140
Name	Introduction to Race, Class, & Ethnicity

**A. Content Area and Essential Skills**



## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate knowledge of information sources on race, ethnicity and class.
2. Demonstrate your understanding of the issues of race, class and ethnicity in America.
3. Demonstrate your understanding and appreciation of regional diversity in the U.S.
4. Define racial and ethnic diversity globally and its consequences.
5. State a hypothesis on race, ethnicity and/or class and write a research paper on the topic of your choice.
6. Discuss cultural competency as a lifelong activity.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Demonstrate an understanding of intersectionality including race, class, gender, sexuality, and disability.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will acquire and evaluate evidence when they analyze in response essays a variety of genre and media, including scholarly articles, online sources, documentaries, feature films, and additional multi-modal instructional materials. These assignments require students to begin to evaluate evidence. Larger scale assignments ask students to problem set through an extended composition how the theories and methods apply to lived experience and cultural artifacts. For example, in “The Identity Narrative” assignment (see attached), students use the study of social construction not only to acquire and evaluate evidence about cultural messages but also to problem set when they analyze their own process of racial and ethnic identity in a narrative assignment that must be presented in the form of a written memoir, a photographic essay, or a sound piece. Students are asked to evaluate and produce arguments as they recognize the ways in which racial and ethnic identities are created through social interaction and to communicate this constructive process to a larger audience. Students will be assessed for their clear reasoning and conclusions they reach in this assignment, assessed for their use of theories and methods presented in class, their depth of analysis, and their ability to engage the audience.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

To use intercultural reasoning and to gain intercultural competence, students will read works by authors with diverse racial, ethnic, gender, sexual, and disabled identities. The readings will address the intersections of these identities and the relationship to cultural systems of power and privilege, both historically and in the modern era. Students will collaboratively discuss and analyze these texts in small groups and develop individual analyses of their own identities in dialogue with other students. For example, students will study the history of legislation in the United States that created and regulated categories of race and gender, from the Supreme Court rulings such as the Dred Scott decision to contemporary legislation, to understand civic discourse's role in the regulation of gender identity through a consideration of transgender and non-binary identities in a local and global context. Students will be assessed for their application of the theories and methods of American Studies to the lived experience of Americans in examining issues such as Civil Rights movements, food justice, drug policy, health care, and education as they are shaped by and shape race, class, ethnicity, gender, sexuality, and disability in the United States.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Students will evaluate the texts used in the class as well as personal research conducted for the purposes of completing assignments using literacy skills to determine the authority and value of information. In addition to producing written work in class, students will also have the option to create digital elements such as webpages, blogs, and videos in order to communicate application of theory and to gain digital literacy. For instance, in the identity narrative (see attached), after reflecting on the viability and appropriateness of various formats and structures, students may opt to create a written memoir, a photographic essay, or an audio essay to communicate the autobiographical experience of the social construction of racial and ethnic identity. Additionally, students will be assessed when they stage inquiries into cultural systems to examine social problems related to race and ethnicity, define a specific problem, and generate a reasonable response. Weekly, students will discuss and debate readings, extracting main ideas and key points to be used in later applications. Students will be assessed for their use of source credibility, accurate use of source material, and ethical citation strategies in assignments.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.cnm.edu/depts/academic-affairs/saac>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

AMST 1140 Identity Narrative Assessment



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## AMST 1140 Identity Narrative Rubric

Filename: AMST\_1140\_Identity\_Narrative\_Rubric.docx Size: 20.7 kB

## Application: 0000000165

Janett Johnson - janett.johnson@clovis.edu

NM General Education Curriculum



## Application Form

Completed - Mar 20 2019

## Application Form

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## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility

6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Janett Johnson
Title	Div.Chair and Instructor
Phone	5757694753
Email	janett.johnson@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Languages, History, and Theater

### Chief Academic Officer

Name	Dr. Robin Jones
Email	robin.jones@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	Marlee.Stephenson@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	MUS
Number	113
Title	Music Appreciation
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

### Co-requisite Course

Prefix	N/A
Number	(No response)
Title (if applicable)	(No response)

### New Mexico Common Course Information

Prefix	MUSC
Number	1130
Name	Music Appreciation:Western Music

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Creative & Fine Arts - Communication, Critical Thinking, Personal & Social Responsibility

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Develop a vocabulary of musical terms, and be able to describe music using those terms.
2. Demonstrate knowledge of composers, their music and their relationship to historical periods.
3. Recognize how music played and plays a political, social, and cultural function.
4. Identify well-known pieces and the historical and social context in which they were composed.
5. Demonstrate basic understanding of music notation and musical communication.

### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Across the semester, students will communicate with one another about a variety of musical works being studied through online discussions in each module referencing musical elements found in the piece, communicating their personal thoughts about what they liked or disliked, and sharing with others their own examples that are similar for the class to consider. While students give their opinion about the music examples, they must also present additional information about musical works and composers. Students must also respond to at least one of their peer's posts for each discussion. Students will communicate through writing a paper comparing and contrasting composers and their musical works considering such factors as the musical period they lived in, the purpose of their music, and outside influences. Students will describe their experiences at concerts they attended by using musical terms learned in the class and their own personal opinions as well as their knowledge of accepted concert etiquette.

Students will read for main points as they navigate through the course's text and prepare for each module's quiz. Students must cite all sources included in their research projects using either MLA or APA format and use credible and reputable sources to communicate information about composers and their works, instruments from various time periods, and modern day musical experiences.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Students will analyze and critically interpret significant musical works from each Musical Period placing emphasis on musical terminology covered in the text and musical structure during the semester. A variety of musical form examples will be utilized through listening and visual means so students can analyze pieces on their own and properly identify the musical structure of a piece. In assessment, all students will take a comprehensive quiz for each module. Every multiple-choice question on the quiz will be linked to one or more of the course objectives that address the area state competencies. Questions on the final exam will be taken from each of the module quizzes focusing on the primary composers of that musical era and their well-known musical works. The use of the text, listening examples, YouTube clips, and study guides, will create an incremental sequence of student comprehension of the course objectives and competencies.

Students will analyze how modern music evolved through the introduction of new instruments, notation, and the ideas of prominent composers. In addition, students will consider the religious, political and social influences on the composers and how they were used to communicate ideas, political agendas and social angst.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will recognize and articulate the role music plays in our society as a whole, its importance in different ethnic cultures and in their own lives in regard to religious, political and social contexts across the semester. Students will recognize and articulate the diversity of music from different musical periods as influenced by the development of musical instruments and a variety of musical forms. In detail, students will describe and discuss the elements of music that lead to their personal like or dislike of a musical genre or piece, the role an audience plays at a live event, and share with each other some of their personal favorites. Students will discuss how different aspects of a composer's life may have influenced the type of music they wrote, make informed opinions about what audience the composer was writing for and how this might have also played a role in the music they wrote as well as identify other outside influences that impacted their music. They must analyze how political, economic, social, and interpersonal influences may have shaped a composer's world view and how early influences in their own lives impacted the types of music they enjoy or play.. The use of the text, listening examples, YouTube clips, and study guides will create an incremental sequence of student comprehension of the course objectives and competencies.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

N/A

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 20 2019



Upload Assessment

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## MUS 113-MUSC 1130 Assessment

Filename: MUS\_113-MUSC\_1130\_Assessment.pdf Size: 129.0 kB



## Upload Rubric

Completed - Mar 20 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## MUS 113-MUSC 1130 Syllabus

Filename: MUS\_113-MUSC\_1130\_Syllabus.pdf Size: 129.5 kB

## Application: 0000000210

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



## Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning

3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Don Scroggins
Title	Division Chair
Phone	5757694909
Email	don.scroggins@clovis.edu

### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

No

**Institutional Course Information**

Prefix	PHYS
Number	151
Title	General Physics I and Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	MATH
Number	110
Title (if applicable)	College Algebra

**New Mexico Common Course Information**

Prefix	PHYS
Number	1230C
Name	Algebra-based Physics and Lab

**A. Content Area and Essential Skills**

## To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

## B. Learning Outcomes

### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

#### Student Learning Outcomes

Upon completion of this course, the student will be able to:

1. Demonstrate converting units and other aspects of dimensional analysis in the working of numerical problems.
2. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of particles in one and two dimensions.
3. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of a rigid body in two dimensions.
4. Apply Newton's theory of gravitation to circular orbits and demonstrate understanding of how Kepler's laws of planetary motion provide the empirical foundation for Newton's theory.
5. Apply the mathematics of vectors to the principles of Newtonian mechanics.
6. Apply principles of Newtonian mechanics to the case of static and dynamic incompressible fluids, including Archimedes's and Bernoulli's principles.

Optional topics may include (some schools include these in Physics I, others in Physics II):

1. sound
2. waves
3. heat
4. oscillatory motion
5. thermodynamics

#### Optional Student Learning Outcomes

1. Describe the fundamental properties of periodic motion.
2. Explain and apply the basic concepts of sound and wave motion.

3. Explain the basic concepts of heat and thermodynamics.

## Algebra-based Physics I Laboratory

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

1. Explain the scientific method.
2. Test ideas using modern laboratory equipment.
3. Estimate experimental uncertainties using statistical methods.
4. Use computers to analyze and report laboratory results.
5. Draw appropriate conclusions from quantitative scientific observations.
6. Accurately and clearly communicate the results of scientific experiments.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

### **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

While using scientific inquiry and the scientific method throughout the semester, students encounter and are assessed with open-ended questions and problems on homework assignments, tests, the final exam, and lab exercises. These questions and problems will require critical thinking skills in order to determine an appropriate response to the questions. Students will also be required to use critical thinking skills by acquiring given data, discerning the unknown factors of the problem, evaluating the data to determine a possible solution pathway, and finally substituting data into an equation to produce a reasonable and accurate conclusion. These critical thinking skills then allow the student to choose and then develop appropriate problem solving strategies to successfully calculate answers to the problems they will encounter across the semester. The questions will require more than simple one-word answers and the students will be evaluated on how well they have analyzed not only their answer but also why they did not choose to select alternative responses to the question. When students are performing calculations, the primary criteria for grading will be whether they arrived at the correct answer to the problem. However, they will also be evaluated on their approach to the problem. The students will be expected to demonstrate their ability to recognize what they are given and what they are asked to determine. When there are multiple approaches to solving a problem, students receive credit for presenting a clear and logical solution that demonstrates critical thinking and for developing their own original solutions.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students will perform calculations throughout the semester involving basic math skills on homework, labs, tests, and the final exam. These calculations will involve straightforward applications of three-variable equations, but they will also involve equations involving as many as six variables that the students will learn to rearrange in order to solve for the desired quantity. The students will also learn to solve problems and represent data that include quantities expressed in scientific notation such as the speed of light in a vacuum and Coulomb's law constant. Students will learn to analyze their answers and then determine if they have a reasonable result based on order of magnitude estimations. The students are assessed on the how well they organize and show their work in addition to the correctness of their answers. Students will be allowed to receive partial credit based on the work they show if they fail to calculate the correct answer as long as they show their work and any errors in their calculations can be identified. This allowance provides learning reinforcement of analysis of quantitative arguments and application of quantitative models. Students have opportunities to learn from any previous mistakes. These opportunities promote future success with problems on subsequent assignments, labs, tests, and the final exam.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Energy can be transformed from one form into another form of energy (e.g. potential energy can be transformed into kinetic energy and vice versa) and it can also be used to perform work. There are monetary and environmental considerations associated with the consumption of energy. While studying work, energy, and other physics topics throughout the semester students will encounter problems/scenarios requiring them to work collaboratively in groups and determine a reasonable and responsible solution. In the case mentioned, they will determine the energy required to perform the work required to move a particular number of people a certain distance. They will then examine options that would allow them to complete this task, including human power, single occupant vehicles, ground mass transit, and air travel. This type of exercise will require the team of students to perform calculations involving work and energy, compare that work with other groups, and determine if the unit conversions involved are compatible with the culture that will apply the solution. The students will analyze their results and discuss the advantages and disadvantages to the options available to accomplish the task and any impacts that may be pertinent locally or globally. These scenario/case studies engage students as they collaborate and consider the impact that physics has on cultures, resource sustainability and wise use, ethics, and civic responsibility. Personal and social responsibility skills are assessed via scenario/case studies, quizzes, and exams.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



## Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### Phys 1230C Test Chaps 6-7

Filename: Phys\_1230C\_Test\_Chaps\_6-7.doc Size: 25.1 kB



## Upload Rubric

Completed - Mar 21 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### Phys 151 Overview-Sched

Filename: Phys\_151\_Overview-Sched.doc Size: 51.7 kB

## Application: 0000000239

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



## Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Corrie Neighbors
Title	Assistant Professor
Phone	575-538-6352
Email	corrie.neighbors@wnmu.edu

### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

## Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	GEOL
Number	2110 (102/104)
Title	Historical Geology and Lab
Number of credits	4

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	GEOL
Number	2110L
Title (if applicable)	Historical Geology Laboratory

## New Mexico Common Course Information

Prefix	GEOL
Number	2110 / Lab
Name	Historical Geology and GEOL 2110L Historical Geology Laboratory

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for GEOL 2110 Historical Geology and GEOL 2110L Historical Geology Laboratory

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. List the major principles of stratigraphy and biostratigraphy and discuss their significance.
2. Recognize or explain how sedimentary rocks can be used to interpret ancient environments.
3. Recognize or explain how plate tectonics has affected the distribution of life, climate, and sea level.
4. Describe the process of Darwinian evolution.
5. Demonstrate a basic knowledge of biodiversity.
6. Recognize and explain taphonomy and the biases inherent in the fossil record.
7. Discuss the major mass extinctions recorded by fossil evidence including potential causes and organisms affected.
8. Compare relative versus absolute time and explain how geologists determine the ages of rocks, fossils, and the Earth.
9. Discuss the development of the geologic time scale.
10. Recognize or explain the history of life on Earth during major time periods and describe major biological innovations through time.
11. Recognize or explain the physical geologic evolution of Earth over time.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*



***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

**Problem Setting:**

Understand that scientists rely on evidence obtained from observations. Students learn to make basic scientific observations related to earth processes.

**Evidence Acquisition:**

Students are expected to be able to describe the processes of scientific thought including observation, hypotheses formation, experiment design, positive and negative controls in experiments and alternative hypotheses. Students make observations of earth processes and generate a hypothesis to understand and explain their observations.

**Evidence Evaluation:**

Throughout the semester, students are required to gather information from experiments in a group setting. The students then compare their data with the data from other teams and compare and contrast aspects of their respective experiments.

**Reasoning and Conclusion:**

Students are required to formulate a hypothesis and then design and conduct an experiment to test the hypothesis. Students assessed their results in the context of results from other teams and then remark on the materials and methods of the experiments. Additionally, students are required to identify weaknesses and issues associated with their experiment and provide suggestions as how to move forward with revised experiments.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

**Communication/Representation of Quantitative Information:**

The students work in groups to perform the experiments and collect the data, and are required to provide individual reports and data analysis in graphical formats. Students are compelled to show their work throughout the mathematical analysis of the data to effectively communicate the quantitative reasoning and method applied.

**Analysis of Quantitative Arguments:**

Students are required to select and perform appropriate quantitative analyses of scientific observations. Students graph data, such as sea level change over time, and interpret trends in the data. Students perform calculations from mapped data, such as the distribution and ages of rocks and fossils.

**Application of Quantitative Models:**

Students collect data and apply discrete data points on a graph (e.g., fossil record). Students are then expected to think outside the parameters of the experiment to make predictions about how different conditions would affect the outcomes. After the gathering of quantitative data, students are required to identify possible sources of error relating to the data sets and methods used.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the Natural and Human Worlds:

Students should gain knowledge of natural Earth resources (e.g., minerals, rocks, fossils and fossil fuels) and how they are consumed and appropriated by society. Students become aware of the dynamic changes of the Earth and the time dependent nature of Earth processes (e.g., events that result in mass extinctions over Earth's history). Students gain understanding of the dynamic nature of the Earth.

Civic Discourse, Civic Knowledge and Engagement – Local and Global:

Students, as members of society, gain knowledge of the scientific method and how to apply this method to real-world problems (e.g., how to assess the age of the Earth). Students learn how to use scientific data and methods (i.e., the scientific method is not a belief) for the betterment of society in public discourse and policy. Students understand how to interpret and develop scientific concepts and how these ultimately are used to create policy (e.g, consumption of fossil fuels). This course promotes national STEM learning objectives that ensure we effectively communicate the use science, math, and engineering in society (e.g., interpretation of maps and graphs with quantitative analysis).

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f:/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CJHkV5-rKUrPnEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 22 2019



## Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### 3A- GEOL 2110-2110L Historical Geology & Lab -Ex Asses 1 -WNMU

Filename: 3A-\_\_GEOL\_2110-2110L\_Historical\_Geolo\_WNq0hBo.docx Size: 320.9 kB



## Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### 2- GEOL 2110-2110L Historical Geology & Lab -Syllabus -WNMU

Filename: 2-\_GEOL\_2110-2110L\_Historical\_Geology\_\_qNAnviJ.pdf Size: 7.5 MB

## Application: 0000000120

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



## Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Math, Engineering, & Technology

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

## Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	MTH
Number	213
Title	Elementary Statistics
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	MATH
Number	1350
Name	Introduction to Statistics

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Explain the general concepts of statistics.
  - a. Explain and evaluate statistics used in the real world (from a news article, research project, etc.).
  - b. Use statistical vocabulary appropriately.
  - c. Distinguish between descriptive and inferential statistics.
  - d. Distinguish between qualitative and quantitative data.
  - e. Distinguish between populations and samples, and parameters and statistics.
  - f. Give examples of independent and dependent variables.
2. Presentation and description of data.
  - a. Present data graphically using histograms, frequency curves and other statistical graphs.
  - b. Interpret graphs of data, including histograms and shapes of distributions.
3. Summarize data using measures of central tendency and variation.
  - a. Calculate and interpret the mean, median, and mode to describe data.
  - b. Calculate and interpret range, variance, and standard deviation to describe data.

4. Present the concepts of probability.

- a. Interpret basic probabilities.
- b. Calculate probabilities using compound probability rules and the binomial distribution.
- c. Calculate probabilities using the standard normal distribution and relate them to areas under the curve.
- d. Determine if the binomial distribution can be approximated with the normal distribution.
- e. Describe the relationship between the sampling distribution and the population distribution.
- f. Use the central limit theorem to approximate the probability distribution and calculate probabilities.

5. Compute point and interval estimates.

- a. Determine the confidence interval for a parameter.
- b. Interpret the confidence level and margin of error.
- c. Determine whether a statistical technique is appropriate under stated conditions.

6. Perform hypothesis tests.

- a. Determine whether a statistical test is appropriate under stated conditions.
- b. Identify null and alternative hypothesis.
- c. Perform and interpret statistical tests (e.g. z-test, t-test, one-tailed and two-tailed, one-sample, two-sample) and determine whether data is statistically significant.
- d. State the conclusion of a hypothesis test.
- e. Interpret a p-value as compared to a significance level.
- f. Explain why a test can lead us to reject a null hypothesis, not accept one.
- g. Distinguish between Type I and Type II errors.

7. Analyze data using regression and correlation.

- a. Explain the difference between correlation and causation.
- b. Construct and interpret scatter plots.
- c. Calculate and interpret the linear correlation coefficient.
- d. Determine and use the equation of a least-squares regression line between two variables to make predictions.
- e. Interpret the meaning of the coefficient of determination.

8. Optional topics.

- a. Inter-quartile range, box-plots, stem-and-leaf plots.
- b. Combinations and permutations.
- c. The Poisson distribution.



- d. Statistical power.
- e. Chi-square.
- f. Analysis of variance.

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

### **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

In this class, students read a variety of research projects that have been conducted on the Navajo Nation. They compare and contrast in small group and whole class discussions differences in research design and research methods. They map out individually and in groups various research processes depending on the question and subject matter. They learn various strategies for understanding and evaluating general concepts of statistics, and also learn how to combine these strategies into ways of gathering ideas about their own research. They examine different types of data. They analyze how data are collected and displayed. They summarize data using measures of central tendency and variation. They learn the connection between descriptive and inferential statistics using probability concepts; examine basic properties of probability; and analyze probability by describing the relationship between sampling and population distributions. Oral participation is stressed all along. Students must understand, follow, explain, describe, and act out. Each student produces a PPT presentation pertaining to a final project and delivers it to the class.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

This class provides students with a strong background in critical thinking. It requires students to analyze data for their own research projects. They must read critically and engage in small and whole group discussions. They must communicate general concepts of statistics. Students learn statistical processes through learning how to ask appropriate research questions about issues that are relevant to the Navajo Nation. The formulation of research questions sets the stage for the students' own research methods and designs. The students gather appropriate evidence and critically evaluate the research data. They critically evaluate the data, and develop conclusions on the basis of that analysis. They test the gathered data to relevant criteria and standards of statistics.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Students learn procedures for gathering, organizing, analyzing, and presenting quantitative data. They do these things by developing research questions that pertain to their own interests. Areas often include: consumer economics, traditional Navajo farming, student perceptions and attitudes among different statuses, genders, and age groups. They develop survey instruments, collect survey data in the field using traditional pencil-and-paper methods, and tabulate the data. They analyze the information using descriptive statistics. They calculate and interpret the mean, median, and mode to calculate range, variance, and standard deviation. They learn that data are the systematic collection and analysis of numerical information so as to explain, compute, calculate, and predict. Students calculate probabilities using compound probability rules and binomial distributions, compute point and interval estimates, and perform hypothesis tests to draw conclusions from the information and develop recommendations. They augment the quantitative data with qualitative information: interviews, focus groups. On the basis of all this, they draw conclusions from the information and develop recommendations for improving life on the Navajo Nation.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

MTH213



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000252

Sara Vigil - savigil@luna.edu

NM General Education Curriculum



Application Form

Completed - Mar 26 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Geno Castillo
Title	Faculty
Phone	5054545304
Email	gcastillo@luna.edu

### Submitting Institution

Name of HEI	Luna Community College
Submitting Department	STEM

### Chief Academic Officer

Name	Sharon Lalla
Email	slalla@luna.edu

### Registrar

Name	Henrietta Maestas
Email	hmaestas@luna.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

(No response)

### Institutional Course Information

Prefix	GEO
Number	2110
Title	Historical Geology & Lab
Number of credits	4

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	NA
Number	NA
Title (if applicable)	NA

**New Mexico Common Course Information**

Prefix	GEO
Number	1110
Name	Physical Geology

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Articulate the development of historical geology as a modern science. 2. Demonstrate an understanding of the diversity of life and evolution through time. 3. Demonstrate an understanding of how past environments have influenced flora and fauna through time. 4. Demonstrate an understanding of earth's structural evolution and evidence of this found today. 5. Describe the way that geologists use science and dating methods to piece together earth's history.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

To develop critical thinking skills, students in GEOL 2110 will be engaged through in-class, homework, and laboratory exercises. Students will practice the scientific method, and engage in assignments using observation, interpretation using fundamental geologic and mathematical concepts. Such observations are identifying fossils (animal and plant), interpretation of evolution of the Earth and life covering all periods of Earth history. Students will also use maps to solve geologic problems such as plate tectonism, and presented with cross-sectional geologic maps to determine relative geologic age relationships. Determining which rocks are older and which rocks are younger. Students will apply reasoning by continued characterization and identify specimens and by answering questions about these specimens. Student will form conclusions at the end of each lab. An example is the Depositional Sedimentary Environments lab. Students will determine in what type of environment (beach, shallow water, or deep water) these rocks formed.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

To develop quantitative reasoning, GEOL 2110 students will solve geological problems. Students will be practicing the scientific method by using numerical datasets. Students will calculate the movement of tectonic plates, and the density of minerals and rocks. The communication/representation of quantitative data will be done by tables, maps and written descriptions. Analysis of quantitative arguments will be done by evaluating the reasonability of the data collected. The application of quantitative models occurs when students use the numerical data to solve geologic problems. In the Plate Tectonics lab, students analyze the Hawaiian islands. They first determine how these islands were created and are given their geologic time of creation (ie, 1.6 ma and 1.0 ma). The students will then calculate the distance between the islands using a map. Finally, the students will calculate the speed of the Pacific Plate.



**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

GEOL 2110 Students work in groups, which allows them to develop their personal and social responsibility. This enables students to develop skills such as teamwork, collaboration and communication, which are used in the real world. Most topics presented in GEOL 2110 will end with a discussion of human interactions with the environment in a geologic context. For example, resource extraction (oil, and natural gas). Students engage in concepts of human interaction with climate change. Students identify some causes that are affecting climate change such as hydrocarbon emissions, and work as a team to suggest on how it can be minimized

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

NA

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 25 2019



Upload Assessment

Completed - Mar 25 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Geol 2110\_LCC\_Sample\_Assessment

Filename: Geol\_2110\_LCC\_Sample\_Assessment.docx Size: 11.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000190

Dianne Marquez - dmarquez@nmjc.edu  
NM General Education Curriculum



Application Form

Completed - Mar 21 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

#### Contact Information

Name	Dallas Hulsey
Title	Professor of English
Phone	5754922833
Email	dhulsey@nmjc.edu

#### Submitting Institution

Name of HEI	New Mexico Junior College
Submitting Department	Humanities

#### Chief Academic Officer

Name	Larry Sanderson
Email	lsanderson@nmjc.edu

#### Registrar

Name	Rebecca Whitley
Email	rwhitley@nmjc.edu

#### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

#### Institutional Course Information

Prefix	SP
Number	103
Title	Introduction to Spanish
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	SPAN
Number	1010
Name	Introduction to Spanish

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Humanities - Information & Digital Literacy, Critical Thinking, Personal & Social Responsibility

**B. Learning Outcomes**

## List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. By the end of the semester, the student should be able to use simple greetings and expressions of courtesy in Spanish. (Spoken at a normal pace.)
2. Students should be able to ask and answer questions about ordering food in a restaurant, greet a friend, use vocabulary in the classroom, speak to and about families, use vocabulary as it relates to hotels, and speak about typical activities related to traveling in a foreign country.
3. Students should be able to recognize numbers from 0 – 1000.
4. Students should be able to conjugate simple verbs used in the Spanish language.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

N/A

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Problem Setting: Students are introduced to cross cultural and cross linguistic interactions. Students state how

communication issues cause problems and how clear communication can solve problems.

Evidence Evaluation:

The course introduces students to the rich culture of the Spanish-speaking world and the Hispanic and Latino

communities in the U.S., thus aiming to develop students' intercultural knowledge and understanding.

This is

primarily a conversational class so speaking progress is evaluated in class and in conversational practice.

Each student is also required to pass an oral interview.

Reasoning/Conclusion:

This elementary-level language courses is designed to develop basic communication skills with an emphasis on oral

Spanish, though some writing skills will be developed too. In this course, students not only learn language skills, but

also critical thinking skills. Through critical thinking, students increase their vocabulary and cultural knowledge. When

reading a passage or listening to a segment, they use their critical skills to analyze and understand its content.

Instructors provide them with tools to analyze and recall new information, organize facts and ideas and combine ideas

to form new ones when expressing themselves. The quality of their critical thinking is assessed with a rubric.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Sustainability and the natural and human worlds: When learning another language and culture, students will

increase their awareness of the diversity of cultures beyond the United States and analyze similarities and differences

between their own culture and others in relation to perceptions, beliefs, and behavior. The goal of language learning

is not only the acquisition of communicative competence in a target language, but also the acquisition and

development of intercultural competence.

Ethical reasoning: This course equips students to engage with others from diverse cultures, particularly from the

Spanish-speaking world, with understanding and respect. It helps students achieve higher levels of personal and social responsibility by recognizing and acknowledging similarities and differences between the Spanish/ Hispanic culture and their own as well as notice linguistic similarities and differences between the target language and their own.

Collaboration skills, teamwork and value systems: Students interact with each other in written and oral exchanges to practice social and communication skills in Spanish. The students' intercultural reasoning is evaluated in the context of an oral presentation about a cultural topic and a rubric is used to assess student learning.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy. 200 – 300 words.*

Authority and Value of Information: Students learn the difference between slang and more proper Spanish expressions. Students are presented with reliable language learning sources, and instructors highlight the difference between Spanish dialects and formality registers.

Digital Literacy: Students utilize modern learning tools, including computers, search engines, library databases, presentation software, and word processors to complete assignments. In the context of language learning, digital literacy is fundamental for students to be intelligent consumers of online language tools, and to be able to customize their own language learning process. Technology itself cannot guarantee learning but can enhance it when properly used.

Information Structure: In this course students participate in oral assignments and group discussions in class. Some of these projects are later extended to the Internet by using podcasts (to practice listening and speaking skills) and occasionally short blog entries to practice reading and writing. Instructors assess information and digital literacy in the context of a project that includes using the Internet to create an introductory podcast and use a rubric to assess student learning.

Research as Inquiry: Cultural curiosity and the impulse to learn of new cultures and languages is itself an inquiry. This class is an answer to the natural curiosity about what unites us as humans as well as what makes each culture unique

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

[https://www.nmjc.edu/about/institutional\\_effectiveness/assessment\\_student.aspx](https://www.nmjc.edu/about/institutional_effectiveness/assessment_student.aspx)

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 21 2019



Upload Assessment



The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

## SP103 Sample Assignment

Filename: SP103\_Sample\_Assignment.docx Size: 12.9 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000122

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



Application Form

Completed - Mar 19 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility

5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Diné Studies

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

### Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

**Is this application for your entire system (ENMU, NMSU, & UNM)?**

Yes

**Institutional Course Information**

Prefix	NAV
Number	110
Title	Foundations of Navajo Culture
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

**New Mexico Common Course Information**

Prefix	ANTH
Number	1330
Name	Navajo Culture

**A. Content Area and Essential Skills**

### **To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Other - Choose 3 essential skills below

### **Choose 3 Skills**

#### **Responses Selected:**

Communication

Critical Thinking

Personal & Social Responsibility

### **B. Learning Outcomes**

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Demonstrate knowledge of Diné cosmology and world order and their relationship to the Diné way of life. a. Discuss the concept of male-female duality. b. Describe how all creations within the earth and sky are recognized according to the duality principle. c. Explain the holistic nature of Diné philosophy; that is, discuss how Nitsáhákees, Nahat'á, liná, and Sihasin are processes found in all aspects of nature. d. Trace the history and cultural development of the Diné using the chronological order of the narratives that developed into ceremonies. 2. Demonstrate knowledge of Diné history using linguistics, oral narratives, and Athapaskan migration theories based on evidence from physical anthropology and archaeology. a. Describe the meanings behind traditional ceremonies and the role these ceremonies play in modern society. b. Describe the changes that have occurred through time in Diné ceremonies as a result of contact with other cultures. c. Describe cultural differences and similarities between Athapaskan groups: Northern, Pacific, and Southern. d. Describe conflicts and changes, which have taken place in Diné society as a result of contact with Plain, Puebloan, and European cultures. 3. Demonstrate analytical research skills in ethnography and folklore as they relate to Diné culture. a. Conduct research on topic(s) relevant to objectives in the course. b. Submit academic quality research papers that are thoughtful and thorough in nature. 4. Develop an understanding of the need for protection and maintenance of natural resources, the environment, and traditional Diné sacred places. a. Discuss the cultural meaning of Diné terms such as Mother Earth, Father Sky, Mountain Woman, Water Woman, Dawn Boy, and so on. b. Explain how these terms are interconnected to human life, life processes, and the natural world. c. Discuss what is meant by a sacred place. d. Explain why sacred places should be reserved and protected. 5. Draw upon the values derived from Diné culture to function successfully as citizens of the Diné community and of the world at large. a. Describe the Diné clan system and explain how it is used as a means of social control within Diné society. b. Identify who they are and where they come from in terms of the Diné clan system. c. Identify their relationship to others within the Diné community and the world at large.

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

This course promotes critical analyzes of Navajo Culture. It offers opportunities to bring mainstream and Indigenous cultural systems into balance. Along the way, the course stresses the development of oral and written communication skills. Students must comprehend lectures about various aspects of Navajo Culture. They engage in small and large group discussions. They listen, comprehend, describe, compare, contrast, and synthesize. They read short narratives about a range of topics central to an understanding of Navajo Culture: Navajo creation stories, Grandmother and Grandfather stories, clanship system, kinship roles, gender roles, values, healing ceremonies, historical traditions, male and female hoghans, cradleboard, basketry, fundamental teachings, oral histories, and more. They conduct interviews with people of different ages, genders, and cultural backgrounds about these topics to examine moral values in modern Navajo society. For a final project, students develop research questions, conduct brief literature reviews, and examine how differences in perception affect people's values, behaviors, and views of the world.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The course also promotes critical thinking. It poses a foundational question: what is Navajo culture? Students listen, understand, read, analyze, compare and contrast, and evaluate to address this question. They identify research questions, analyze what others have said about their questions, gather information about them, and derive their own conclusions on the basis of thoughtful analysis. Along the way, the students are introduced to Nature-based systems thinking (looking at the life cycles of animals, birds, plants, ecosystems, and land). They are encouraged to appreciate diversity and multiple interpretations of reality. They develop character and emotional intelligence. They self-reflect. They question anthropocentrism and status-quo paradigms, and reflect upon experiential ones. The students are encouraged to respect all life on this planet. They embrace the mysterious and recognize the spirit in all of life around us. The students are encouraged to think critically so that they may contribute significantly to the public good.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

NA

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses **2** of the components of personal & social responsibility. 200 – 300 words.*

The Navajo People are on the verge of losing their foundational cultural principles with the passage of time. If the People do not preserve, protect, re-learn, and perpetuate Navajo Culture, it may diminish along with Navajo identity and Navajo language. The loss of these cultural principles would be a serious consequence to the traditional well-being of the Navajo. Therefore, the purpose of this course is to train students in Navajo traditional cultural principles so that they can be the ones to carry this ancient knowledge for future generations. The course is also intended to help students become knowledge holders so that they may teach others. Navajo students hold high honor in their families, clans, communities, and society as a whole. They are striving to become more knowledgeable, capable, and effective. They are training for leadership roles. Expectations for their success are high. This course supports students who seek to become more effective as members of Navajo society. It helps them become better leaders, counselors, healers, and knowledge holders. It puts them on a pathway toward better living: in having good reputations, wanting to serve others, and remaining modest, revered, hard-working, sincere, reliable, honest, dedicated, and generous.

**Information & Digital Literacy. *Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry***

*In this box, provide a narrative that explains how the proposed course addresses **3** of the components of digital literacy. 200 – 300 words.*

NA

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**



## Date

Mar 19 2019



### Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

NAV110

Filename: NAV110.sample-assessment.docx Size: 22.9 kB



### Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000137

David Torres - davytorres@nnmc.edu

NM General Education Curriculum



### Application Form

Completed - Mar 21 2019

## Application Form

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## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on

essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	David Torres
Title	Chair of Mathematics and Physical Science
Phone	5057472174
Email	davytorres@nnmc.edu

### Submitting Institution

Name of HEI	Northern New Mexico College
Submitting Department	Mathematics and Physical Science

### Chief Academic Officer

Name	Ivan Lopez
Email	provost@nnmc.edu

## Registrar

Name	Gerald Wheeler
Email	geraldwheeler@nnmc.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	PHYS
Number	122
Title	Applied Physics II
Number of credits	3

## Was this course previously part of the New Mexico General Education curriculum?

Yes

## Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	PHYS
Number	1240
Name	Algebra-based Physics II

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Be able to state Coulomb's Law and Gauss's laws and apply them.
2. Apply the concepts of electric charge, electric field and electric potential to solve problems.
3. Analyze simple DC and AC circuits.
4. Apply the Lorentz force to solve problems.
5. Apply Faraday's law of induction (and Lenz's law) to solve problems.
6. Apply ray optics to practical lens systems such as microscopes and corrective lenses.
7. Apply the wave nature of light to the phenomena of reflection, refraction, and diffraction.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

No additional institution-specific student learning outcomes will be used.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

All the Student Learning Outcomes will be covered in the course. Students will calculate the force between two charges using Coulomb's law given the distance between the two charges. Vectors can be used to calculate forces given two or more additional charges. Lorentz force law can be used to calculate the force on a moving charge given a magnetic field. Students will need to learn how to compute the direction of the force using the right-hand rule for cross-products.

We will focus our narrative on Student Learning Outcome 3 (Analyze simple DC and AC circuits). Students will be required to compute the energy losses in a cable using three different voltages (120 V, 240 V, and 480 V), three different cable diameters (.25 cm, .5 cm, and 1 cm) and two different materials (aluminum and copper). Computing the energy loss per time can be done using the formula  $R \cdot P^2 / (V^3)$  where R is the resistance in ohms, P is the power to be transmitted in watts, and V is the voltage in volts. Students will also need to compute the resistance in a wire given its diameter and material composition using the formula  $R = (\rho \cdot L) / A$  where  $\rho$  is the resistivity of the material, L is the length of the cable and A is the cross-sectional area of the cable. Students should understand the problem setting and the physical meaning of voltage, power, resistance, and resistivity as well as the units (volts, watts, ohms, ohms\*meters) used to define each of these quantities. Evidence acquisition involves collecting these formulas and using a table which contains the resistivities of different conductors. Evidence evaluation will require fixing the power to be transmitted, computing the resistance of the material in ohms given its area, and computing the energy loss per time in watts. This process needs to be repeated for different cross-sectional areas, different voltages, and two different materials. Students will be required to plot the energy loss per time for different voltages and the energy loss per time for different cable diameters. Students should realize that the power loss is inversely proportional to the voltage squared and inversely proportional to the diameter squared and thus make some conclusions about their calculations.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

All the Student Learning Outcomes will be covered in the course. Students will learn how Faraday's Law can explain how voltage can be generated by changing the magnetic flux through a coil. Quantitative calculations will be required to determine the average change in magnetic flux using two different coil orientations. Lenz's law can explain the direction of the induced current.

We will focus our narrative on Student Learning Outcome 3 (Analyze simple DC and AC circuits). Quantitative reasoning is required to use formulas for resistance and power loss. Students need to substitute numbers into the formulas to compute a quantity of interest. Students will also need to consult a table of resistivities to compute resistance. Resistance will need to be computed before energy losses per time are computed. Students will also need to use consistent units (International System of Units or SI units) when computing quantities. For example, centimeters will need to be converted to meters before they are used in the formulas. These procedures require students to use quantitative models (formulas), and apply the quantitative models to describe the relationship between two different variables. For example, students will learn that the energy loss is proportional to the resistance, proportional to the power squared, and inversely proportional to the voltage squared and diameter squared. These relationships explain why the voltage used in transmission lines is large. Students will need to use communication skills to explain the use of high voltages. While large diameter cables incur less energy loss, they also weigh and cost more, so one must consider several factors when choosing the cable diameter. Students will also need to learn the difference between DC (direct current) and AC (alternating current).

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

Students will also need to assess the environmental impact of different power plants in a report. For example power plants that use coal may emit different amounts of greenhouse gases and particulates compared to power plants that use natural gas or fuel oil. The types of fuels used by current power plants and their availability should also be researched. The cost of the electricity production will also need to be considered for each type of fuel. Students will also be asked to assess the cost of transmitting electricity over large distances. Could substantial savings be made by building more power plants closer to cities? Would it be worth the cost of increased air pollution near urban areas? Students will be asked to compare the current cost of using photovoltaic cells to compute electricity.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://nnmc.edu/home/academics/office-of-the-provost/office-of-institutional-research/assessment-2/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### **Date**

Mar 20 2019



Upload Assessment

Completed - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Assessment\_PHYS\_1240

Filename: Assessment\_PHYS\_1240.docx Size: 110.3 kB

Upload Rubric





Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Application: 0000000172

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



### Application Form

Completed - Mar 22 2019

## Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

# Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

## Contact Information

Name	Jeffrey Hill
Title	Professor/Chair Natural Sciences
Phone	575-538-6269
Email	Jeffrey.hill@wnmu.edu

## Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

## Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

## Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

## Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	BIOL
Number	2210
Title	Human Anatomy & Physiology I
Number of credits	3

**Was this course previously part of the New Mexico General Education curriculum?**

Yes

**Will this course only count toward General Education for the AAS degree (at your institution)?**

No

**Co-requisite Course**

Prefix	BIOL
Number	2210L
Title (if applicable)	Human Anatomy & Physiology I LAB

**New Mexico Common Course Information**

Prefix	BIOL
Number	2210/L
Name	Human Anatomy & Physiology I / LAB

**A. Content Area and Essential Skills**

**To which area should this course be added?**

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

**B. Learning Outcomes**

**List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

This course follows the CCNS SLOs for BIOL 2210 - Human Anatomy & Physiology I / BIOL 2210L - Human Anatomy & Physiology I Lab

**Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Shared student Learning Outcomes:

1. Describe and apply anatomical terminology.
2. Describe multi cellular organization.
3. Distinguish and describe major tissue types.
4. Describe the structure and function of the integumentary system.
5. Describe the structure and function of the skeletal system.
6. Describe the structure and function of the muscular system.
7. Describe the structure and function of the nervous system.
8. Describe the structure and function of the special senses.
9. Define homeostasis and describe specific examples for the integumentary, skeletal, muscular, and nervous systems.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 - 300 words.*

**Problem Setting:** In this course, students will learn the science process and how to evaluate data and problems using the scientific method. Throughout the course students will be repeatedly asked to identify patterns in data to recognize problems and understand the problem setting. Most of this will involve using sets of symptoms to identify disease processes in humans, but it will also involve being able to look at normal when the body is operating normally (e.g., heart rate of 65-75 at rest) and understand when the body is not functioning normally (e.g., heart rate of 110 at rest) and the consequences of abnormal body functioning.

**Evidence Acquisition:** Throughout the course, students will have to understand problem settings and be able to analyze the problem to know what data they need or what experiments need to be run to understand/solve the problem. Using our example above with heart rate, students should be able to identify that they need to measure blood pressure, to understand if a heart rate of 110 at rest is a problem. In this example they would need to know how to measure the blood pressure, what the values indicate, and problems caused by abnormal values.

**Evidence Evaluation:** When collecting evidence to understand body functioning and problems related to body function, students will learn to evaluate sources of information. By learning the science process, students will learn support is developed for an idea and how through constant testing and review it develops into a theory. Students working on challenge problems in class will be taught to be through review what sources and types of evidence are highly reliable and which sources are less reliable. For example, evidence from companies producing dietary supplements often is highly unreliable because they are not

required to prove their claims.

Reasoning and Conclusion: Throughout the course students will be working on problems related to body function and required to understand the problem setting, acquire and evaluate sources of evidence, and then after going through these steps, draw well-reasoned and supported conclusions. In review of student's conclusions, they will be helped to understand, based on their sources of evidence and their analysis of the problem, the strengths, and weaknesses of their conclusions.

In class, students will be given challenge problems to work on that will help them to prepare for similar problems on exams. For example, they might be asked how increased sodium levels in the body would affect the operation of nerves, muscles, and the urine output at the kidney. Repeated problem-solving in class will help students learn how to approach these problems and solve similar problems on exams. The ultimate goal is that when students have completed the course they will be able to logically approach problems related to the operation of body systems, understand how changes in body conditions would affect the operation of body systems, and draw appropriate conclusions.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Communication/Representation of Quantitative Information: In this course, students will be required to use methods of quantitative analysis to calculate values, create graphical representations of data, evaluate quantitative information, and draw supported conclusions of what this information tells the student about the functioning of body systems. For example, in examining the function of both nerves and muscles, students will need to be able to understand action potential graphs and interpret what is happening at different points on the graph and how this affects body functioning. Students will also have to be able to clearly and concisely explain the conclusions they draw from different types of quantitative information and understand what represents a significant change in values.

Analysis of Quantitative Arguments: Students will be required to interpret various types of graphical information (histograms, line graphs, scatter plots, etc.) in the course and draw conclusions from the data presented. They will also have to be able to judge the reliability of data based on sample sizes and draw conclusions about factors that could bias the data they are interpreting. Students will also review conclusions drawn by other students working on similar problems and learn how to effectively use data to question conclusions drawn by other students. A good example of a problem they will work on is when we review the methods used in the cranial capacity studies done in the 1800's to justify slavery.

Application of Quantitative Models: Throughout the course students will be exposed to various forms of quantitative analysis methods and will be asked to calculate values, evaluate the validity of data sets, and draw conclusions from analyzed data. By working on problems they will learn which quantitative models to use to evaluate different types of data and the shortcomings of different analysis methods. Data analysis skills will be developed in classroom exercises and evaluated on exams.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

**Intercultural Reasoning and Intercultural Competence:** Intercultural reasoning issues come up a number of times in this course. One way to develop intercultural reasoning and understanding is through an understanding of how natural selection has led to differences in how humans look and function physiologically due to where their ancestors evolved on the planet. Below are examples that we explore in the course. One issue explore is how genetics affects skin color, why certain populations have darker or lighter skin (i.e., why UV light is important for vitamin “D”) and why skin color changes with light exposure. Another issue we explore is brain size and IQ. We explore the 19th century cranial capacity studies that were used justify slavery and how these studies were biased. In this discussion we explore changes in brain structure that appear to be linked to great intelligence. We also explore how where your ancestors lived can affect physiology. For example, why some populations have adaptations to carry more oxygen in their blood and the consequences of these adaptions. These issues are discussed in class and reviewed though questions on exams.

**Ethical Reasoning:** In this course, students will have numerous chances to explore and develop an understanding of personal and social responsibility. In the study of anatomy and physiology a number of ethical issues are explored with students. In the review of ethical issues in this course we look at the values which drive ethics, looking at how family, schooling, society, and religion influence values. It is important to understand the development of values to understand ethical reasoning. Throughout the course various ethical issues are encountered and explored. For example, in the developing an understanding of the nervous system we look at drug addiction and the neurotransmitters involved in addiction. The whole issue of drugs, both legal and illegal, brings up multiple ethical issues. For example, should drug companies be able to advertise prescription drugs and should they be able to pay doctors kickbacks for using a specific drug? We explore the opioid epidemic and issues like, should governments provide needles to addicts to reduce disease? Others issues that come up are the use of fetal tissue, assisted suicide for terminal patients, and how much genetic manipulation of embryos should we allow. Ethical issues come out throughout the course and are reviewed in small group discussion (collaboration/teamwork skills). In the discussion on issues and exams, students are expected to understand competing points of view on an issue and respect alternate points of view to gain a fuller understanding of issues (i.e., Civil Discourse). On exams, student are asked thought questions that require them to consider the important factors and ethical issues brought up by different ethical problems.



#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EjEtxsUi0CjHkV5-rKUrPnEBVUkNjaJPSJAaorjVjhNqiW?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 20 2019



#### Upload Assessment

Completed - Mar 20 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

#### 3- BIOL 2210-2210L H A Physiology -Ex Asse - WNMU

Filename: 3-\_BIOL\_2210-2210L\_H\_A\_Physiology\_-Ex\_\_fcceclN.doc Size: 648.7 kB



#### Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

#### 2- BIOL 2210-2210L H A Physiology I -syllabus - WNMU

Filename: 2-\_BIOL\_2210-2210L\_H\_A\_\_\_Physiology\_I\_\_nzFSt7F.doc Size: 92.7 kB

## Application: 0000000052

steven young - young@nmml.edu

NM General Education Curriculum



#### Application Form

Completed - Mar 22 2019

# Application Form

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## Essential Skills

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6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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## Deadline for Next Curriculum Committee Meeting

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### Contact Information

Name	steven young
Title	assistant professor mathematics
Phone	575-624-8154
Email	young@nmml.edu

### Submitting Institution

Name of HEI	NMMI
Submitting Department	Math

### Chief Academic Officer

Name	General Douglas Murray
Email	dmurray@nmmi.edu

### Registrar

Name	Chris Wright
Email	Wright@nmmi.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	MATH
Number	1073
Title	Intro Contemporary Math
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

Yes

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	MATH
Number	1130
Name	Survey of Mathematics, 3

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

## **List all common course student learning outcomes for the course.**

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Construct and analyze graphs and data sets. a. Gather and organize information b. Understand the use and purpose of different types of graphical representations such as Histograms, pie charts, box and whisker plot, tables. c. interpret data via these representations to draw conclusions.
2. Apply and solve various types of equations. a. Understand the purpose and use of formulas in application problems. b. Solve equations and verify solutions make sense with respect to the nature of the problem.
3. Understand and express mathematics via definitions and symbols. Be able to express a problem in common language and then directly translate to solvable equations.
4. Cultivate problem solving skills. a. Be able to express an application in writing and orally. b. Choose appropriate strategy to solve a problem. c. Be able to collect, organize, and present relevant information/data for a given application.

## **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

Upon graduation from NMML, a cadet who has completed coursework in the field of mathematics will be able to:

1. Demonstrate mathematical knowledge and skills.
2. Demonstrate mathematical models to solve problems in a variety of contexts.
3. Employ current technology for individualized learning and problem solving and the preparation of assignments.
4. Exhibit the learning skills necessary to succeed in mathematics.

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Contemporary Math emphasizes symbolic, computational, and graphical mathematics. Expressing an answer via notation or as an arithmetic expression is stressed as instructor can be certain student understood problem, prior to any computations.

Genre and Medium Awareness is naturally cultivated in the interplay between both algebra and geometry as mediums of expression. Some widely used algebraic expressions (identities) have geometric representations. Examples include a binomial squared, the difference of two squares, and completing the square, all of which can be represented by properly labeled graphs of squares. Visual learners who struggled in College Algebra are often amazed that many of the dry formulas they memorized are shown to be true in the medium of simple geometric figures. Contemporary Math, which covers some light geometry, is not highly dependent on a deep understanding of Algebra, but showing students the graphical/geometric aspect of widely used algebra results might benefit them in future math classes.

Evaluation and production of arguments has value in the geometry piece of Contemporary Math which is certainly not a proof based course. However there are a number of geometric formulas/results that are more readily remembered if the student understands the proof or can reproduce the proof. An example is relationship between the diagonal of square and the squares area. A student who memorizes this relationship, without understanding, is at higher academic risk than the student who understands the proof. An assessment of this will be attached to this submission.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Contemporary Math broadens critical thinking ability through various mathematical/reasoning challenge problems and applications. Students enhance their critical thinking and problem solving strength by solving real world problems in finance, for example, that will make it less likely for them to be deceived in a high dollar financial transaction like a home mortgage. A concrete example of Reasoning/Conclusion is the decision to choose either a 15 year mortgage or a 30 year mortgage when purchasing a home. Coming to an evidence based logical conclusion is crucial to the home buyer's financial well-being. A home mortgage is a decision which can lead to long term unfavorable consequences if not carefully considered at the outset.

Problem setting and evidence acquisition are nurtured in geometry, probability/statistics, rates, ratios, and proportions. Statistics stresses the importance of objective evidence/data acquisition introducing the notions of bias, leading questions, and self-selecting samples with regard to data collection.

Critical thinking will be assessed two ways. The first will be to apply departmental rubric to selected major exam problems. The second will be impromptu presentations by members of the class who know a different approach to a problem and are confident enough to board demonstrate to their classmates. The departmental critical thinking rubric is attached to this submission.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Contemporary Math serves to develop/improve quantitative reasoning via numerical analysis of practical applications. Teaching approaches are primarily arithmetic/computational with very little dependency on proficiency in algebra.

The analysis of quantitative arguments and the application of quantitative models will be enhanced in the math of growth and finance, probability and statistics, and voting methods.

Quantitative reasoning is well illustrated by computations in other bases in positional number systems. For example, adding, subtracting, multiplying and dividing in base 16 or Hexadecimal is quite challenging for many students and they often do not trust the results of the calculation.

To help them believe the results of computations in bases other than 10, instructor asks students to convert the hexadecimal numbers to base 10, and then do the computation to verify the accuracy of the computation in base 16. Many “Wow moments” when they confirm the calculations agree in this example of quantitative reasoning!

Assessment data is collected by grading exam questions of the “calculate and verify in base 10” ilk. A noteworthy observation is that a number of the students will verify on other problems where verification was not specified in the directions. This certainly indicates the students have improved their number sense and minimized their dependency on calculators for computations they should be able to perform “by hand”.

**D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/academics/institutional-research/>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**



## Date

Mar 20 2019



### Upload Assessment

Completed - Mar 22 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### CritThinkingSquareCircleArea

Filename: CritThinkingSquareCircleArea.PNG Size: 13.8 kB



### Upload Rubric

Completed - Mar 22 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

### CriticalThinkingRubric

Filename: CriticalThinkingRubric.JPG Size: 59.9 kB

## Application: 0000000111

Daniel McLaughlin - dmclaughlin@navajotech.edu

NM General Education Curriculum



### Application Form

Completed - Mar 19 2019

## Application Form

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5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

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### Contact Information

Name	Daniel McLaughlin
Title	Student Learning Coordinator
Phone	5052319599
Email	dmclaughlin@navajotech.edu

### Submitting Institution

Name of HEI	Navajo Technical University
Submitting Department	Dean of Instruction

### Chief Academic Officer

Name	Casmir Agbaraji
Email	cagbaraji@navajotech.edu

## Registrar

Name	Nathalie Becenti
Email	n.becenti@navajotech.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

## Institutional Course Information

Prefix	MTH
Number	121
Title	College Algebra
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	

## New Mexico Common Course Information

Prefix	MATH
Number	1220
Name	College Algebra

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Mathematics - Communication, Critical Thinking, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1. Use function notation; perform function arithmetic, including composition; find inverse functions. 2. Identify functions and their transformations given in algebraic, graphical, numerical, and verbal representations, and explain the connections between these representations. 3. Graph and interpret key feature of functions, e.g., intercepts, leading term, end behavior, asymptotes. 4. Solve equations algebraically to answer questions about graphs, and use graphs to estimate solutions to equations. 5. Solve contextual problems by identifying the appropriate type of function given the context and creating a formula based on the information given. 6. Communicate mathematical information using proper notation and verbal explanations.

#### Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

NA

## C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

### ***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Oral and written communication are stressed throughout MTH 121. For every class students are expected to take notes from explanations provided by the instructor. Students are challenged to pay attention and ask questions. There is at least one real-life problem per week that students need to read, analyze, interpret, and solve. In addition, students communicate in various genres and mediums:

- Written communication: Students have assignments every week in which they need to solve different algebraic exercises and real-life problems. Students have to write the process to solve the exercises step-by-step.
- Oral communication: There are group classroom activities every two weeks. Students must share their ideas with other classmates. Later, they are asked to analyze and evaluate arguments in groups and finally to determine correct solutions for the exercises.
- Digital communication: There is also a project at the end of the semester. In this assignment, students partner up with a fellow student. They choose a project idea (e.g. determining bacteria growth, computing compound interest of an investment account, determining cooking recipes), and they represent quantitative information using appropriate equations to solve problems. The project must be presented to the class using presentation software (e.g. Powerpoint, Prezi, or Adobe Flash).

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

This course provides students with tools to explain, analyze, and evaluate information, and to convey that information algebraically. Solving algebraic exercises within the context of real-life problems on a weekly basis, doing group activities every two weeks, and conducting final projects at the end of the semester, students must understand problems, compare and contrast algebraic techniques, and identify data necessary to solve contextual problems. After they solve the problem students are asked to write interpretations for the solution. They must determine if the solution makes sense. Finally, students have to develop conclusions based on data gathered from estimations and computations.

***Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

College Algebra offers students a college level academic experience that accentuates the use of algebra and functions in problem-solving and modeling, supplies the algebra and other mathematics needed in partner disciplines, provides a foundation in quantitative literacy, and helps meet quantitative needs in, and outside of, academia. Students address problems presented as real-world situations by creating and interpreting mathematical models. Solutions to the problems are formulated, validated, and analyzed using mental, paper and pencil, algebraic, and technology-based techniques as appropriate. In weekly assignments, students express quantitative information symbolically using equations and formulas (e.g. compound interest, inflation, population growth, depreciation, cost-revenue-profit), graphs (e.g. linear functions, quadratic functions, cubic functions, polynomial functions, rational functions, circle equation), and written language (e.g. add, subtract, multiply and divide functions, find inverse functions, solve real-life problems). In addition, students complete quizzes and exams in which they analyze the effects of changes (amounts borrowed, saved, or invested; interest rates; frequency of compounding; length of time) made to investments, savings plans and mortgages. They use formulas and graphs to analyze various scenarios, make estimations and predictions, interpret results, and state conclusions that they can apply to their own financial decision making.

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

<http://www.navajotech.edu/academics/general-education-resources>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 19 2019



Upload Assessment

Completed - Mar 19 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

MTH121

Filename: MTH121.sample-assessment.docx Size: 22.4 kB



Upload Rubric

Incomplete

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

**Application: 0000000088**

Don Scroggins - don.scroggins@clovis.edu

NM General Education Curriculum



Application Form

Completed - Mar 18 2019

Application Form

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### Contact Information

Name	Don Scroggins/Lilly Robino
Title	Division Chair/adjunct professor
Phone	5757694909
Email	don.scroggins@clovis.edu



### Submitting Institution

Name of HEI	Clovis Community College
Submitting Department	Science

### Chief Academic Officer

Name	Dr. Robin Jones
Email	jonesr@clovis.edu

### Registrar

Name	Marlee Stephenson
Email	StephensonM@clovis.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

No

### Institutional Course Information

Prefix	CHEM
Number	152
Title	General Chemistry II and Lab
Number of credits	4

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	CHEM
Number	151
Title (if applicable)	General Chemistry I and Lab

## New Mexico Common Course Information

Prefix	CHEM
Number	1225C
Name	General Chemistry II Lecture and Laboratory for STEM Majors

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Science - Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

Student Learning Outcomes – Lecture

1. Explain the intermolecular attractive forces that determine physical properties and phase transitions, and apply this knowledge to qualitatively evaluate these forces from structure and to predict the physical properties that result.
2. Calculate solution concentrations in various units, explain the effects of temperature, pressure and structure on solubility, and describe the colligative properties of solutions, and determine solution concentrations using colligative property values and vice versa.
3. Explain rates of reaction, rate laws, and half life, determine the rate, rate law and rate constant of a reaction and calculate concentration as a function of time and vice versa, as well as explain the collision

model of reaction dynamics and derive a rate law from a reaction mechanism, evaluating the consistency of a mechanism of a given rate law.

4. Describe the dynamic nature of chemical equilibrium and its relation to reaction rates, and apply LeChatelier's Principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures as well as describe the equilibrium constant and use it to determine whether equilibrium has been established, and calculate equilibrium constants from equilibrium concentrations and vice versa.
5. Describe the different models of acids and base behavior and the molecular basis for acid strength, as well as apply equilibrium principles to aqueous solutions, including acid base and solubility reactions, and calculate pH and species concentrations in buffered and unbuffered solutions.
6. Explain titration curves and speciation diagrams, as well as calculate concentrations of reactants from the former and determine dominant species as a function of pH from the latter.
7. Explain and calculate the thermodynamic functions, enthalpy, entropy and Gibbs free energy, for a chemical system, and relate these functions to equilibrium constants and reaction spontaneity; balance redox equations, express them as two half reactions and evaluate the potential, free energy and equilibrium K for the reaction, as well as predict the spontaneous direction.
8. Construct a model of a galvanic or electrolytic cell; or describe organic reactions.
9. Describe bonding theories, such as valence and molecular orbital theory.

#### Student Learning Outcomes – Laboratory

1. Demonstrate and apply concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value with the correct units, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Prepare solutions with an acceptable accuracy to a known concentration using appropriate glassware.
5. Perform basic laboratory operations related to, but not limited to, gas behavior, colligative properties of solutions, calorimetry, chemical kinetics, chemical equilibria, acid/base titrations, electrochemistry, metal reactivity, and qualitative analyses of ions.
6. Draw conclusions based on data and analyses from laboratory experiments.
7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes, as required.

8. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
9. Design experimental procedures to study chemical phenomena

### **Institution-specific Student Learning Outcomes**

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

n/a

### **C. Narrative**

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

Critical thinking is a standard aspect of any general chemistry course. Additionally, it is the backbone of the scientific method, which the students use throughout this course. In this course, the students are assessed on critical thinking via multiple methods. Evidence acquisition, evidence evaluation and reasoning are assessed via class discussions where the students are given a topic to research and evaluate. The topics covered include how they use the scientific method in their daily lives, climate change and ocean acidification, nuclear energy, and advances in science/biotechnology. The topics often require the students to find and evaluate scientific evidence and state a conclusion backed by valid evidence.

In addition, the students participate in a series of lab assignments and complete a final lab project, which assess all aspects of critical thinking. The lab assignments function to guide the students through the steps of scientific method. Each individual lab assignment correlates with a particular general chemistry topic (such as reaction kinetics, nuclear chemistry, or electrochemistry). The student begins by first formulating their own hypothesis based on their knowledge of the topic and background research, after which they test their hypothesis via a guided hands-on experiment. They must then evaluate data obtained from the experiment and discuss their final conclusions, including potential sources of error and future studies, all of which will be assessed via a formal lab report.

In order to evaluate their overall critical thinking skills, the students are also tasked with a final lab project in which they must follow all steps of the scientific method by designing and performing an experiment on a topic of their choosing. The students submit a formal lab report in which they discuss the relevance of their topic of choice, formulate a hypothesis, describe their full experimental procedure, present and analyze their results, and develop a conclusion based on their data and make recommendations for follow-up studies.

**Quantitative Reasoning. *Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning. 200 – 300 words.*

Quantitative reasoning occurs throughout the lecture and lab portions of this course. In the lecture portion of the course, the students use quantitative reasoning when using equations and formulas (such as determining the rate of a particular chemical reaction under different conditions, calculating half-life of a radioactive isotope, or calculating the voltage of an electrochemical cell). Assessment of the lecture material is primarily performed via exams (including a proctored midterm and final exam) and graded homework assignments.

In the lab portion of the course, the students complete several lab assignments that generate quantitative data that the students must analyze. For example, the students complete a vitamin C clock lab, which looks at chemical reaction rates. In this lab, the students examine the effects of concentration and temperature on a reaction where two colorless liquids are mixed together and after a few moments turn blue. Using the data obtained, the students will calculate the reaction rate for the particular reaction under different conditions.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

This course examines the societal impacts of some of the major topics of scientific inquiry, including global warming/climate change, ocean acidification, and nuclear disaster. This is assessed through online discussions and/or guided debate in which the students are asked to critically evaluate scientific information that is commonly presented to them by the media. Some topics will require the students to discuss the topic and present their opinion backed by valid scientific evidence (for example, does ocean acidification really exist), while other topics will require the student to present information on topics relevant to society (for example, discussing the impacts of nuclear disasters, such as Chernobyl and Fukushima).

#### D. Assessment Plan (Must be on file with HED by August 1, 2019)

Link to Institution's General Education Assessment Plan

n/a

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

#### Date

Mar 18 2019



Upload Assessment

Completed - Mar 18 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

Sample assessment Chem 152

Filename: Sample\_assessment\_Chem\_152.docx Size: 25.3 kB



Upload Rubric

Completed - Mar 18 2019

The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

General Chemistry II sample syllabus

Filename: General\_Chemistry\_II\_sample\_syllabus.pdf Size: 767.4 kB

**Application: 0000000006**

A. BAILEY Pagels - pagelsa@wnmu.edu

NM General Education Curriculum



Application Form

Completed - Mar 22 2019

# Application Form

The goal of the new models of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. New Mexico's new General Education models must be adopted by all of New Mexico's public higher education institutions by **August 1, 2019**.

## Essential Skills

The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of six content areas:

1. Communications: Communication, Critical Thinking, Information & Digital Literacy
2. Mathematics: Communication, Critical Thinking, Quantitative Reasoning
3. Science: Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning
4. Social & Behavioral Sciences: Communication, Critical Thinking, Personal & Social Responsibility
5. Humanities: Critical Thinking, Information & Digital Literacy, Personal & Social Responsibility
6. Creative and Fine Arts: Communication, Critical Thinking, Personal & Social Responsibility
7. Other: 3 Essential Skills chosen by the institution

Faculty teaching courses within any given content area must weave the three related essential skills throughout their course while also addressing content knowledge and skills.

## Deadline for Next Curriculum Committee Meeting

Applications to add courses to the new General Education Curriculum must be received by **May 17, 2019** to be heard at the **June 13-14, 2019** NMCAC Meeting.

### Contact Information

Name	Joel Blaxland
Title	Assistant Professor of Political Science
Phone	575.538.6229
Email	Joel.Blaxland@wnmu.edu



### Submitting Institution

Name of HEI	Western New Mexico University
Submitting Department	Academic Affairs

### Chief Academic Officer

Name	William Jack Crocker
Email	William.Crocker@wnmu.edu

### Registrar

Name	Betsy Miller
Email	Betsy.Miller@wnmu.edu

### Is this application for your entire system (ENMU, NMSU, & UNM)?

Yes

### Institutional Course Information

Prefix	POLS
Number	1120
Title	American National Government
Number of credits	3

### Was this course previously part of the New Mexico General Education curriculum?

Yes

### Will this course only count toward General Education for the AAS degree (at your institution)?

No

## Co-requisite Course

Prefix	(No response)
Number	(No response)
Title (if applicable)	(No response)

## New Mexico Common Course Information

Prefix	POLS
Number	1120
Name	American National Government

### A. Content Area and Essential Skills

#### To which area should this course be added?

Indicate "Other" if the course is not associated with one of the six NM General Education areas.

Social & Behavioral Sciences - Communication, Critical Thinking, Personal & Social Responsibility

### B. Learning Outcomes

#### List all common course student learning outcomes for the course.

Common Course Student Learning Outcomes (find Common Course SLOs at:  
<http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>)

1) Students will be able to discuss the historical and political foundations of the United States government, 2) Students will be able to explain the precursors to, and the development and adoption of the US Constitution, 3) Students will be able to discuss the US federal system, the basics of federalism, and the changing relationship of state and federal power, 4) Students will be able to describe the power, structure, and operation of the main institutions of the US government; including the legislative, executive, judicial, and federal bureaucracy, 5) Students will be able to discuss the development and the role of political parties and interest groups, 6) Students will be able to identify the constitutional basis of civil rights and civil liberties and their changing interpretation, and 7) Students will be able to describe the role of demographics, public opinion, and the media in American Politics.

## Institution-specific Student Learning Outcomes

List all institution-specific Student Learning Outcomes that are common to all course sections offered at the institutions regardless of instructor.

1. Identify, describe and explain human behavior and how it is influenced by social and political structures, geography, economics, culture, history, and social institutions, 2. Characterize processes within the context of complex and diverse communities through the study of significant primary texts, quantitative data, works of art, and literature across a range of historical periods and geographical areas, 3. Articulate how beliefs, assumptions, and values are influenced by factors such as political, economic, social, cultural, religious, and intellectual structures, and 4. Apply this knowledge base of the social and behavioral sciences to identify, describe, explain, and critically evaluate relevant issues such as sustainability, ethical dilemmas, and other contemporary arguments as they apply to the world we live in today.

### C. Narrative

In the boxes provided, write a short (less than 300 words) narrative explaining how the course weaves the essential skills associated with the content area throughout the course. Explain what students are going to do to develop the essential skills and how you will assess their learning. The narrative should be written with a general audience in mind and avoid discipline specific jargon as much as possible.

*Be sure to address the component skills listed next to each essential skills. The number of component skills that must be addressed by your narrative is listed.*

***Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments.***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of communication. 200 – 300 words.*

Throughout the semester, students work in both small and large groups settings where they will practice applying introductory political science theory to pertinent topics at the city, state, national, and international level. Faculty encourage students to identify and express ties, parallels, and emerging nuances in cases from the past to modern current events in succinct, clear, and in informed and respectful ways (in both writing and in discussion). Students will exercise the capacity to reason logically, to test what they read or what others say for consistency of reasoning, and to delineate empirically supported arguments from unsupported. Student teams have the opportunity to debate with others on salient and key political issues. As students respond to various discussion and writing activity prompts of other student teams, faculty reinforce the practice of evaluating diverse points of view, listening without interruption, and to question ideas rather than individuals. All oral and written work assesses students on their ability to construct a sound argument; to draw theoretically and empirically supported conclusions, and their capacity to advocate for their stance while recognizing the validity of alternative explanations. As the semester progresses, students are assessed on the quality, clarity, and strength of their arguments; growth in producing and evaluating their own arguments on a given political topic; and their understanding of fundamental theoretical political science concepts, theories, and empirical evidence. Students' skills in these areas are continually assessed throughout the semester using rubrics on written work as well as on assigned oral presentations/debates.

***Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion***

*In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking. 200 – 300 words.*

The course prepares students in logical and evaluative reasoning of arguments while maintain an awareness of and sensitivity to social, political, and economic forces and contexts. Students will hone their critical thinking skills and their ability to critically evaluate the American political environment and explain the development of constitutional democracy. Class reading, lectures and discussions will permit students to gather and synthesize information and analyze and evaluate its usefulness relevant to political issues. Writing assignments and quizzes assess students' capacity to think critically and reason logically about American politics and governance. Within the frameworks of political and governmental structures, their operation, actors, and roles in shaping both public opinion/behaviors and the media, students are given individual and group activities that require different levels of scholarly research/reasoning to support, refute, or explain current political events.

**Personal & Social Responsibility. *Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement - local and global***

*In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility. 200 – 300 words.*

This political science course focuses on the importance of understanding the reciprocal relationships between public and the government in shaping opinion, participation, and ideas about democratic governance. Students are challenged to consider what has shaped their opinions, values, and ideology and encouraged to connect them to how the actions of individuals and the nation state influence other cultures, sustainability, and global issues. Students will gain and be able to demonstrate a basic knowledge of the American political system, the importance of civic and political participation, and social movements through civic engagement activities. Through these activities, students will gain a better understanding of community issues and resources, and develop a familiarity with local, state and federal governmental entities. By cultivating a connection between students and community, students will develop a sense of social responsibility for the creation of a healthy community while maintaining tradition, i.e. culture, language. Students will gain the skills necessary to understand and evaluate political choices and outcomes. Students will demonstrate an understanding of different strategies for political participation and knowledge of rights and responsibilities of citizenship. Reflective writing samples based on lectures, class discussion, required class readings, and other assigned work assess if the student understands ethical decision-making and responsibilities as a citizen.

#### **D. Assessment Plan (Must be on file with HED by August 1, 2019)**

Link to Institution's General Education Assessment Plan

<https://westernnewmexicouni140.sharepoint.com/:f/g/Curriculum%20&%20Instruction%20Committee/EJEtxsUi0CJHkV5-rKUrPnEBVUkNjaJPSJAaorjVJhNqiw?e=Yr1bX2>

**This course has been reviewed by the institution's Chief Academic Officer and meets institutional standards for general education (signature of CAO below).**

**Date**

Mar 18 2019



## Upload Assessment

**Completed** - Mar 21 2019

The assessment should illustrate how at least one of the essential skills is assessed within the context of the course.

### POLS1120 American National Government

**Filename:** POLS1120\_American\_National\_Government.pdf **Size:** 410.7 kB



## Upload Rubric

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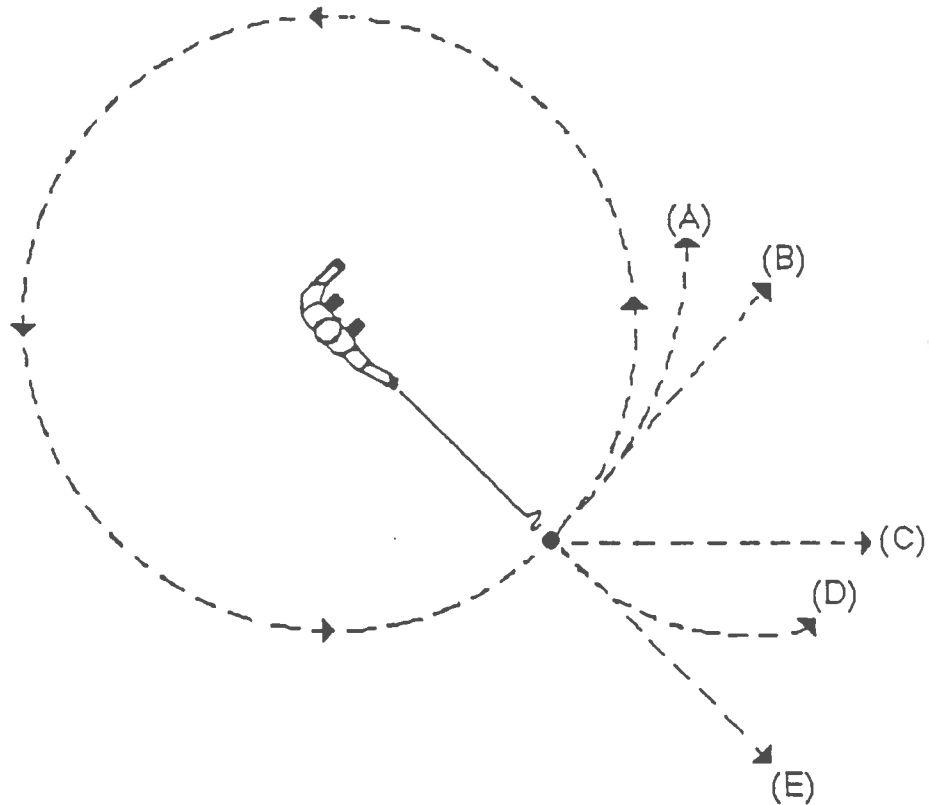
The optional rubric should illustrate how at least one of the essential skills is assessed within the context of the course.

## Force Concept Inventory

1. Two metal balls are the same size, but one weighs twice as much as the other. The balls are dropped from the top of a two story building at the same instant of time. The time it takes the balls to reach the ground below will be:
  - (A) about half as long for the heavier ball.
  - (B) about half as long for the lighter ball.
  - (C) about the same time for both balls.
  - (D) considerably less for the heavier ball, but not necessarily half as long.
  - (E) considerably less for the lighter ball, but not necessarily half as long.
2. Imagine a head-on collision between a large truck and a small compact car. During the collision,
  - (A) the truck exerts a greater amount of force on the car than the car exerts on the truck.
  - (B) the car exerts a greater amount of force on the truck than the truck exerts on the car.
  - (C) neither exerts a force on the other, the car gets smashed simply because it gets in the way of the truck.
  - (D) the truck exerts a force on the car but the car doesn't exert a force on the truck.
  - (E) the truck exerts the same amount of force on the car as the car exerts on the truck.
3. Two steel balls, one of which weighs twice as much as the other, roll off of a horizontal table with the same speeds. In this situation:
  - (A) both balls impact the floor at approximately the same horizontal distance from the base of the table.
  - (B) the heavier ball impacts the floor at about half the horizontal distance from the base of the table than does the lighter.
  - (C) the lighter ball impacts the floor at about half the horizontal distance from the base of the table than does the heavier.
  - (D) the heavier ball hits considerably closer to the base of the table than the lighter, but not necessarily half the horizontal distance.
  - (E) the lighter ball hits considerably closer to the base of the table than the heavier, but not necessarily half the horizontal distance.

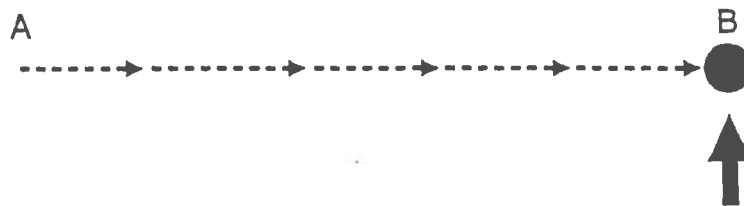


4. A heavy ball is attached to a string and swung in a circular path in a horizontal plane as illustrated in the diagram below. At the point indicated in the diagram, the string suddenly breaks at the ball. If these events were observed from directly above, indicate the path of the ball after the string breaks.

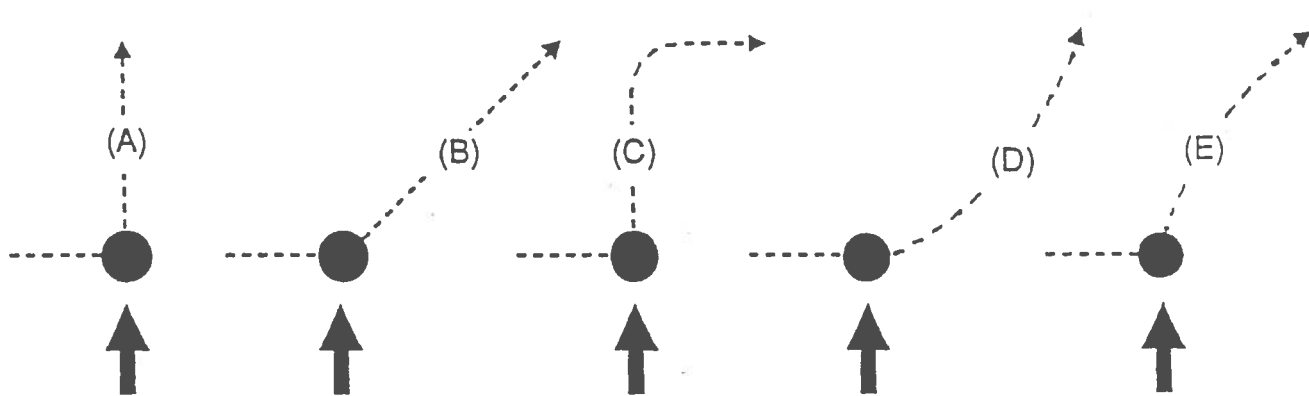


5. A boy throws a steel ball straight up. Disregarding any effects of air resistance, the force(s) acting on the ball until it returns to the ground is(are):
- (A) its weight vertically downward along with a steadily decreasing upward force.
  - (B) a steadily decreasing upward force from the moment it leaves the hand until it reaches its highest point beyond which there is a steadily increasing downward force of gravity as the object gets closer to the earth.
  - (C) a constant downward force of gravity along with an upward force that steadily decreases until the ball reaches its highest point, after which there is only the constant downward force of gravity.
  - (D) a constant downward force of gravity only.
  - (E) none of the above, the ball falls back down to the earth simply because that is its natural action.

- \* Use the statement and diagram below to answer the next four questions:
- \* The diagram depicts a hockey puck sliding, with a constant velocity, from point "A" to point "B" along a frictionless horizontal surface. When the puck reaches point "B", it receives an instantaneous horizontal "kick" in the direction of the heavy print arrow.

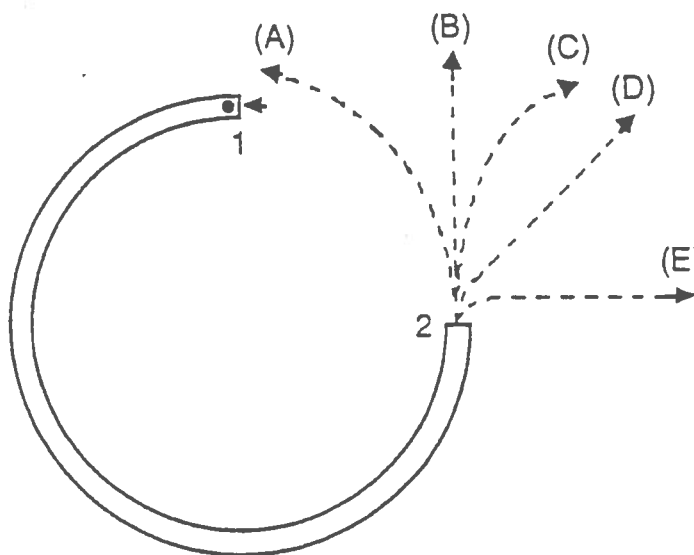


6. Along which of the paths below will the hockey puck move after receiving the "kick" ?

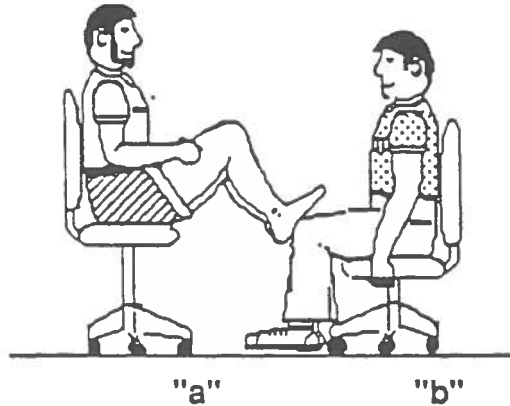


7. The speed of the puck just after it receives the "kick"?
- Equal to the speed " $v_0$ " it had before it received the "kick".
  - Equal to the speed " $v$ " it acquires from the "kick", and independent of the speed " $v_0$ ".
  - Equal to the arithmetic sum of speeds " $v_0$ " and " $v$ ".
  - Smaller than either of speeds " $v_0$ " or " $v$ ".
  - Greater than either of speeds " $v_0$ " or " $v$ ", but smaller than the arithmetic sum of these two speeds.
8. Along the frictionless path you have chosen, how does the speed of the puck vary after receiving the "kick"?
- No change.
  - Continuously increasing.
  - Continuously decreasing.
  - Increasing for a while, and decreasing thereafter.
  - Constant for a while, and decreasing thereafter.

9. The main forces acting, after the "kick", on the puck along the path you have chosen are:
- (A) the downward force due to gravity and the effect of air pressure.
  - (B) the downward force of gravity and the horizontal force of momentum in the direction of motion.
  - (C) the downward force of gravity, the upward force exerted by the table, and a horizontal force acting on the puck in the direction of motion.
  - (D) the downward force of gravity and an upward force exerted on the puck by the table.
  - (E) gravity does not exert a force on the puck, it falls because of the intrinsic tendency of the object to fall to its natural place.
10. The accompanying diagram depicts a semicircular channel that has been securely attached, in a horizontal plane, to a table top. A ball enters the channel at "1" and exits at "2". Which of the path representations would most nearly correspond to the path of the ball as it exits the channel at "2" and rolls across the table top.



- \* Two students, student "a" who has a mass of 95 kg and student "b" who has a mass of 77 kg sit in identical office chairs facing each other. Student "a" places his bare feet on student "b's" knees, as shown below. Student "a" then suddenly pushes outward with his feet, causing both chairs to move.



11. In this situation,

- (A) neither student exerts a force on the other.
- (B) student "a" exerts a force on "b", but "b" doesn't exert any force on "a".
- (C) each student exerts a force on the other but "b" exerts the larger force.
- (D) each student exerts a force on the other but "a" exerts the larger force.
- (E) each student exerts the same amount of force on the other.

12. A book is at rest on a table top. Which of the following force(s) is(are) acting on the book?

- 1. A downward force due to gravity.
- 2. The upward force by the table.
- 3. A net downward force due to air pressure.
- 4. A net upward force due to air pressure.

- (A) 1 only
- (B) 1 and 2
- (C) 1, 2, and 3
- (D) 1, 2, and 4
- (E) none of these, since the book is at rest there are no forces acting on it.

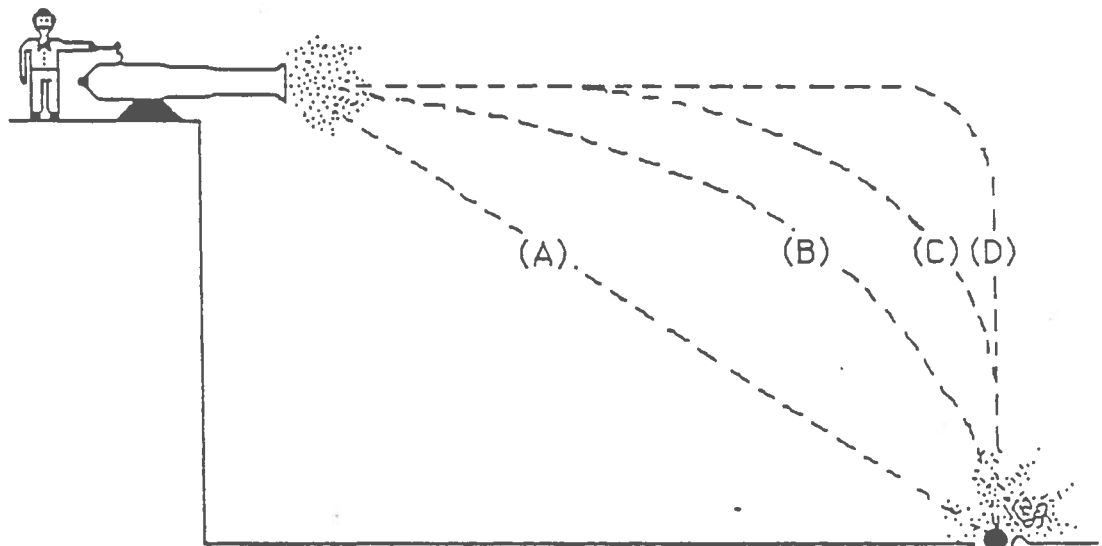
- \* Refer to the following statement and diagram while answering the next two questions.



A large truck breaks down out on the road and receives a push back into town by a small compact car.

13. While the car, still pushing the truck, is speeding up to get up to cruising speed;
- (A) the force of the car pushing against the truck is equal in amount to that of the truck pushing back against the car.
  - (B) the force of the car pushing against the truck is less than that of the truck pushing back against the car.
  - (C) the force of the car pushing against the truck is greater than that of the truck pushing back against the car.
  - (D) the car's engine is running so it applies a force as it pushes against the truck but the truck's engine isn't running so it can't push back with a force against the car.
  - (E) neither the car nor the truck exert any force on the other, the truck is pushed forward simply because it is in the way of the car.
14. After the person in the car, while pushing the truck, reaches the cruising speed at which he/she wishes to continue to travel at a constant speed;
- (A) the amount of force of the car pushing against the truck is equal to that of the truck pushing back against the car.
  - (B) the amount of force of the car pushing against the truck is less than that of the truck pushing back against the car.
  - (C) the amount of force of the car pushing against the truck is greater than that of the truck pushing against the car.
  - (D) the car's engine is running so it applies a force as it pushes against the truck but the truck's engine is not running so it can't push back against the car, the truck is pushed forward simply because it is in the way of the car.
  - (E) neither the car nor the truck exert any force on the other, the truck is pushed forward simply because it is in the way of the car.

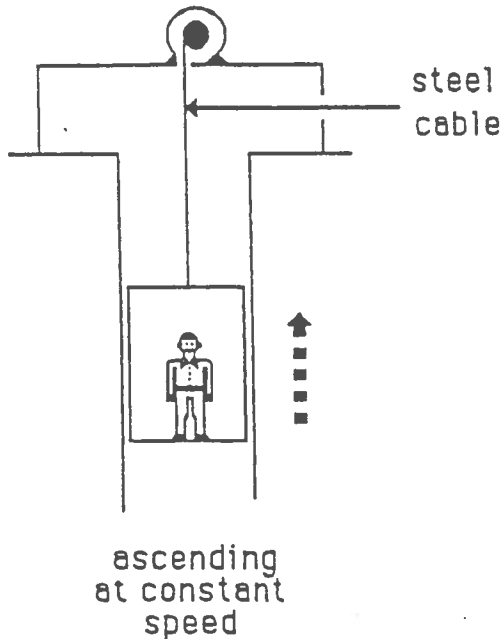
15. When a rubber ball dropped from rest bounces off the floor, its direction of motion is reversed because;
- (A) energy of the ball is conserved.
  - (B) momentum of the ball is conserved.
  - (C) the floor exerts a force on the ball that stops its fall and then drives it upward.
  - (D) the floor is in the way and the ball has to keep moving.
  - (E) none of the above.
16. Which of the paths in the diagram below best represents the path of the cannon ball?



17. A stone falling from the roof of a single story building to the surface of the earth;
- (A) reaches its maximum speed quite soon after release and then falls at a constant speed thereafter.
  - (B) speeds up as it falls, primarily because the closer the stone gets to the earth, the stronger the gravitational attraction.
  - (C) speeds up because of the constant gravitational force acting on it.
  - (D) falls because of the intrinsic tendency of all objects to fall toward the earth.
  - (E) falls because of a combination of the force of gravity and the air pressure pushing it downward.

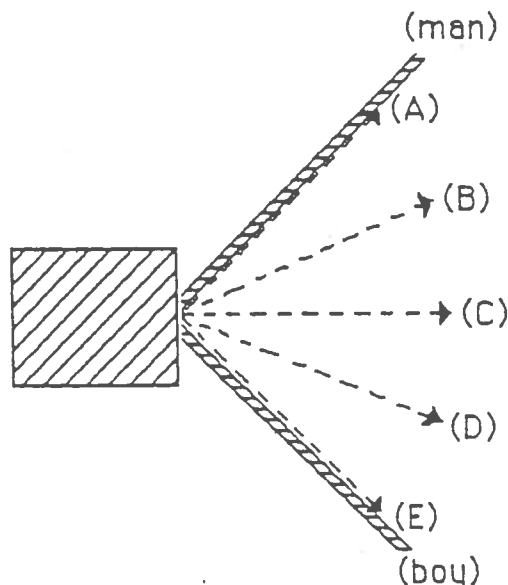
- \* When responding to the following question, assume that any frictional forces due to air resistance are so small that they can be ignored.

18. An elevator, as illustrated, is being lifted up an elevator shaft by a steel cable. When the elevator is moving up the shaft at a constant velocity:

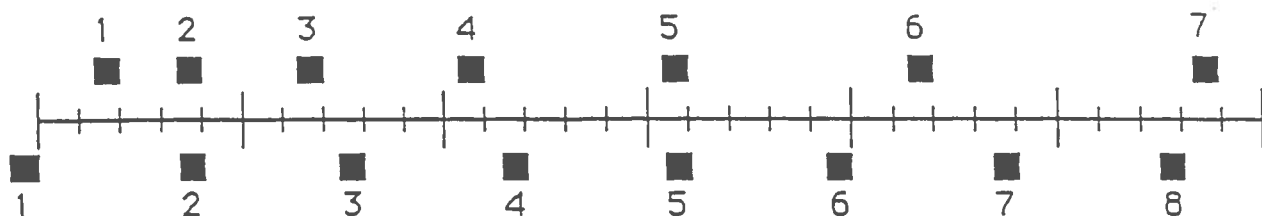


- (A) the upward force on the elevator by the cable is greater than the downward force of gravity.
- (B) the amount of upward force on the elevator by the cable is equal to that of the downward force of gravity
- (C) the upward force on the elevator by the cable is less than the downward force of gravity.
- (D) it goes up because the cable is being shortened, not because of the force being exerted on the elevator by the cable.
- (E) the upward force on the elevator by the cable is greater than the downward force due to the combined effects of air pressure and the force of gravity.

19. Two people, a large man and a boy, are pulling as hard as they can on two ropes attached to a crate, as illustrated in the diagram below. Which of the indicated paths (A-E) would most likely correspond to the path of the crate as they pull it along?

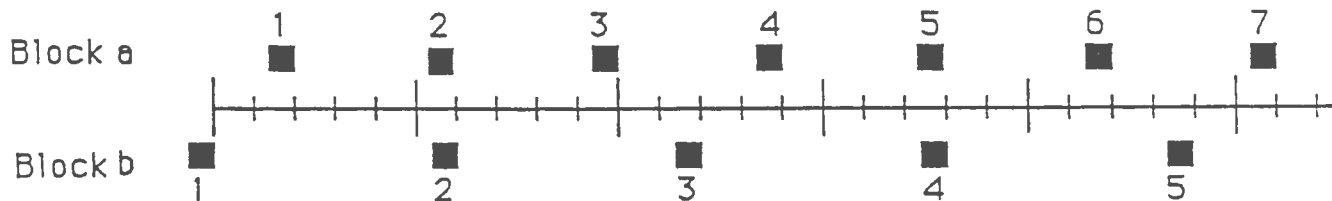


- \* The positions of two blocks at successive 0.20 second time intervals are represented by the numbered squares in the diagram below. The blocks are moving toward the right.



20. Do the blocks ever have the same speed?

- (A) No.
  - (B) Yes, at instant 2.
  - (C) Yes, at instant 5.
  - (D) Yes, at instant 2 and 5.
  - (E) Yes, at some time during interval 3 to 4.
- \* The positions of two blocks at successive equal time intervals are represented by numbered squares in the diagram below. The blocks are moving toward the right.

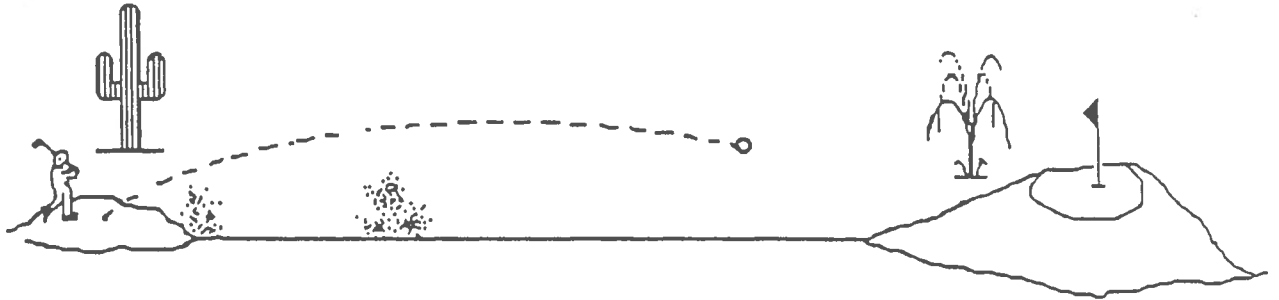


21. The acceleration of the blocks are related as follows:

- (A) acceleration of "a" > acceleration of "b"
- (B) acceleration of "a" = acceleration of "b" > 0
- (C) acceleration of "b" > acceleration of "a"
- (D) acceleration of "a" = acceleration of "b" = 0
- (E) not enough information to answer.



22. After being hit, a golf ball driven down a fairway is observed to travel through the air with a trajectory (flight path) similar to that in the depiction below.



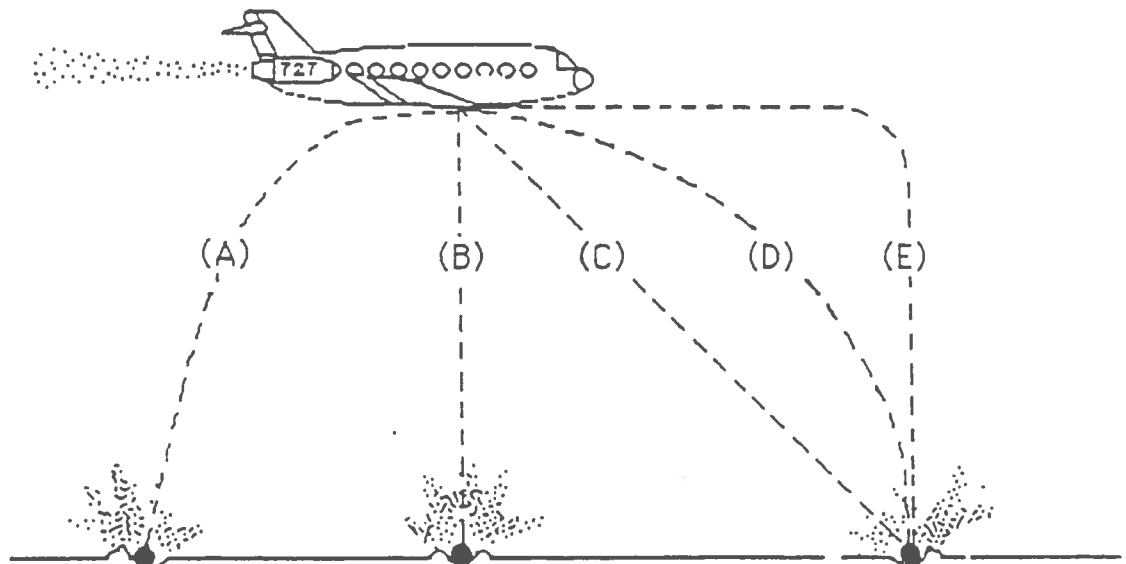
Which following force(s) is(are) acting on the golf ball during its entire flight?

1. the force of gravity
2. the force of the "hit"
3. the force of air resistance

- (A) 1 only  
(B) 1 and 2  
(C) 1, 2, and 3

- (D) 1 and 3  
(E) 2 and 3

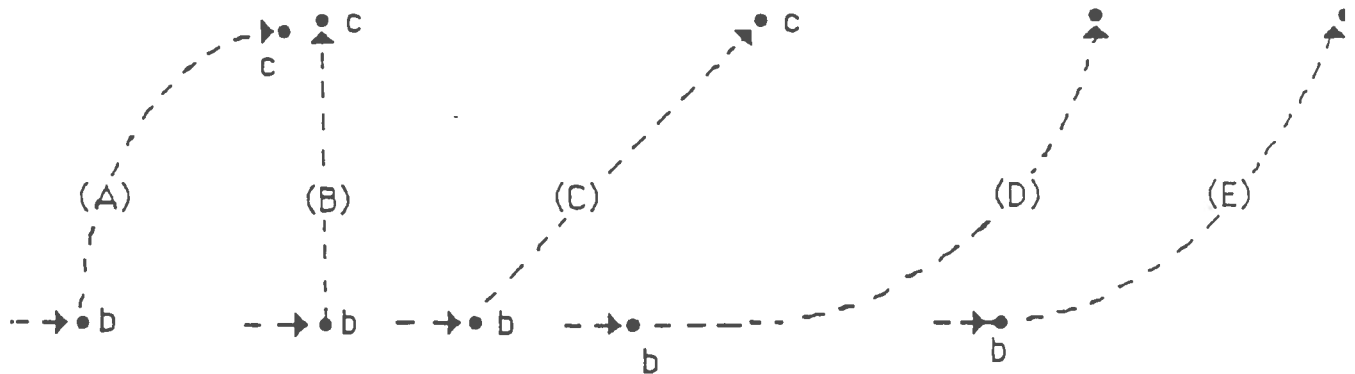
23. A bowling ball accidentally falls out of the cargo bay of an airliner as it flies along in a horizontal direction. As seen from the ground, which path below would the bowling ball most closely follow after leaving the airplane?



- \* When answering the next four questions, refer to the following statement and diagram.
- \* A rocket, drifting sideways in outer space from position "a" to position "b". is subject to no outside forces. At "b", the rocket's engine starts to produce a constant thrust at right angles to line "ab". The engine turns off again as the rocket reaches some point "c".



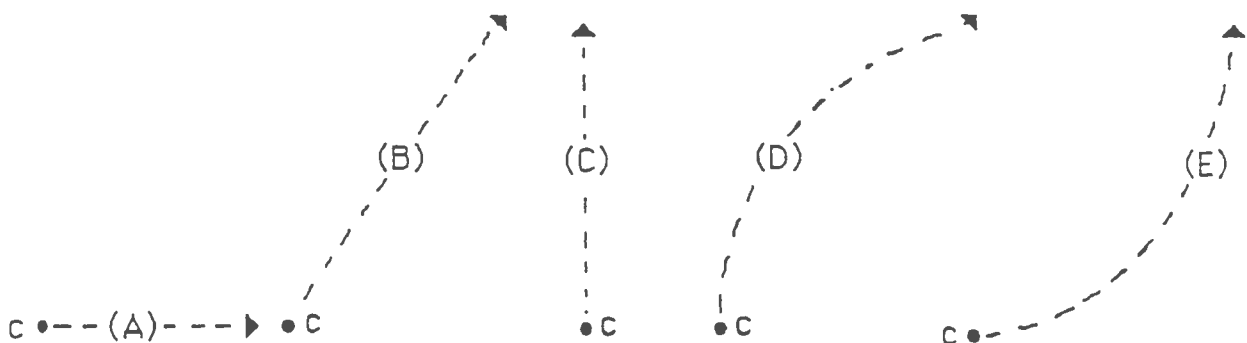
24. Which path below best represents the path of the rocket between "b" and "c"?



25. As the rocket moves from "b" to "c", its speed is;

- (A) constant.
- (B) continuously increasing.
- (C) continuously decreasing.
- (D) increasing for a while and constant thereafter.
- (E) constant for a while and decreasing thereafter.

26. At "c" the rocket's engine is turned off. Which of the paths below will the rocket follow beyond "c"?



27. Beyond "c", the speed of the rocket is;

- (A) constant.
- (B) continuously increasing.
- (C) continuously decreasing.
- (D) increasing for a while and constant thereafter.
- (E) constant for a while and decreasing thereafter.

28. A large box is being pushed across the floor at a constant speed of 4.0 m/s. What can you conclude about the forces acting on the box.

- (A) If the force applied to the box is doubled, the constant speed of the box will increase to 8.0 m/s.
- (B) The force applied to move the box at a constant speed must be more than its weight.
- (C) The force applied to move the box at a constant speed must be just equal to the external forces that resist its motion.
- (D) The force applied to move the box at a constant speed must be more than the external forces that resist its motion.
- (E) There is a force being applied to the box to make it move but the external forces such as friction are not "real" forces they just resist motion.

29. If the force being applied to the box in the preceding problem is suddenly discontinued, the box will;

- (A) stop immediately.
- (B) continue at a constant speed for a very short period of time and then slow to a stop.
- (C) immediately start slowing to a stop.
- (D) continue at a constant velocity.
- (E) increase its speed for a very short period of time, then start slowing to a stop.

## I. COURSE DESCRIPTION

- a) Course number/Name – PHYS 1004
- b) Prerequisite – Intro-College Algebra or Higher
- c) General Scope of Course – Newtonian mechanics, review of mathematics required for physics
- d) Meetings –Rm 103 McClure.
- e) Instructor – Dr. Tang, Rm 103 McClure. Work phone NMMI X8169 email: [tang@nmmi.edu](mailto:tang@nmmi.edu)
- f) Text – Physics Giancoli 7<sup>th</sup> edition
- a) Homework-Mastering Physics. You need to purchase a pass code at the cadet store. You can buy the code with the textbook or separately. If you registered for Introduction to physics, you can still use that code for general physics. The course ID will be given to you at the first day of class. **You need to register for the course by the end of the first week.**
- b) The Lab Manual will be provided to you at the beginning of the semester.
- h) Requirements:
  - Scientific Calculator, pencil & notebook. **You are required to take notes.**
  - **NO LAPTOP OR CELLPHONE in the classroom.**
  - **Homework is assigned once a week online. Absolutely no late homework unless an acceptable reason.**
  - **The tests are accumulative tests. No test corrections. But bonus points will be assigned before the test. No test grades will be dropped at the end of the semester. But the final exam grade can replace one old test grade.**
  - Makeup lab, homework, quiz or test must be completed **in a week after the absence.**
  - **One quiz per chapter.** Quiz dates are not posted on the weekly schedule.
  - **No change in final exam schedule due to the air ticket, car pool or other reasons.**
  - **Every Monday and Wednesday night is the physics night at Wilson Hall. Dr. Tang and Dr. Yang will be there for the semester.**

## II. COURSE OBJECTIVES

- A. **Substantive Objectives:** At the conclusion of this course, you will be able to
1. Demonstrate an understanding of the physical principles, such as Newtonian laws of mechanics, Newton's theory of gravitation, and fluid dynamics.
  2. Know the symbol for the physical quantities covered, and know the physical quantity for which each symbol stands;
  3. Demonstrate an improved insight into the mechanical phenomena of the physical world, and have the knowledge of the technical terms used in the discussion of the phenomena studied.

4. Recognize the role that mechanics plays in many facts of our life and the responsibility of those who understand physics to contribute appropriately to their communities;
5. Using the scientific method to conduct an experiment with modern laboratory equipment.

**B. Skill Objectives:** Upon completion of this course, you will be able to

1. Apply principles of Newtonian mechanics to predict or calculate the translational motion of particles in one or higher dimensions using algebra.
2. Apply work and energy principle to understand the energy transfer and solve the problem with kinetic energy and potential energy.
3. Apply a systematic approach to problem solving by
  - a) Identify knowns and unknowns and set up strategies to solve the problem.
  - b) Derive algebraic solutions using appropriate symbols for physical terms.
4. Solve problems involving reading or constructing a graph.
5. Applying mathematics of vectors to principles of physics, such as vector addition, dot product and cross product of vectors.
6. Use Vernier Logger Pro units, LabQuests, computers, and/or the internet to gather, compile, and present information gathered experimentally;
7. Use other laboratory equipment to experimentally verify mechanical concepts.
8. Complete the laboratory report that presents experimental data in a data table and includes an analysis of the experimental results. Complete the pre and post-lab questions.

### III. TESTING AND ASSEMENT

- a) Homework will count for 10% of your course average.
- b) Labs will count 15% of your course average.
- c) Quiz will count 10% of your course average.
- d) Tests will count 40% of your course average.
- e) The final exam will be comprehensive in nature and counts as 20% of your final average.
- f) Class Participation and Behavior. This category will count 5 % towards your final average.
- g) Grades. Grades will be assigned according to the scale below:

89.0 – 100%	A	79.0 – 88.9%	B	69.0 – 78.9%	C	60.0 – 68.9%	D	<60.0%	F
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### IV. LATE POLICY

I do **NOT** accept late homework, lab reports, or extra credit except in the case of excused class absence on the day the assignment is due. **If you know that you will miss a test due to an athletic trip or for some other reason, then before the scheduled test date you must arrange with me a time to take the test. Failure to make prior arrangement will result in a 0 on the test.** If a test or quiz is missed due to an excused absence, it will be made up the day you return to class. In case of an extended period of absence, you and I will confer on the makeup schedule.

## V. HONOR POLICY

**Cheating, assisting in cheating, or employing other types of academic dishonesty to any degree and in any form automatically results in a grade of ZERO on the entire assignment or test for all parties involved. Further, a grade of F in that class for the semester may be given and the incident will be referred to the Commandant.**

## August, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13 Syllabus, Chapter 1, significant figures	14 No labs	15 Chapter 1, significant figures	16	17 Chapter 1, converting units	18
19	20 Chapter 1, converting units	21 Lab 1: Measurements and Uncertainty	22 Chapter 1, algebra & dimensional analysis	23	24 Review Chapter 1 and Quiz at the end	25
26	27 Pre Test Review	28 Exam 1 on Chapter 1	29 Chapter 2, Secs 1-2	30	31 Chapter 2, Secs 3-4	

## September, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 No Class	4 Lab 2: Graphic Matching	5 Chapter 2, Secs 5	6	7 Chapter 2, Secs 6	8
9	10 Chapter 2, Secs 7	11 Lab 3: Determining $g$ on incline	12 Chapter 2, Secs 8	13	14 Review Chapter	15
16	17 Review Chapter 2 and quiz at the end	18 Exam 2 on Chapter 1-2	19 Post test review and Chapter 3, Sec 1	20	21 Chapter 3, Sec 2	22
23	24 Chapter 3, Secs 3-4	25 Lab 4: Picket Fence Free Fall	26 Chapter 3, Secs 5	27	28 Study Sheet (short class)	29



## October, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	1 No Class	2 Lab 5: Projectile Motion	3 Chapter 3, Secs 6	4	5 Chapter 3, Secs 7-8	6
7	8 Review Chapter 3 and Quiz at the end	9 Exam 3 on Chapter 1-3	10 Post Test Review	11	12 Chapter 4, Secs 1-2	13
14	15 Chapter 4, Secs 3-4	16 Lab 6: Newton's Second Law	17 Chapter 4, Secs 5	18	19 Chapter 4, Secs 6-7	20
21	22 Chapter 4, Secs 8	23 Lab 7: Atwood's Machine	24 Chapter 4, Secs 9	25	26 Study Sheet	27
28	29 Review on Chapter 4 and Quiz at the end	30 Exam 4 on Chapter 1-4	31 Post Test Review			

## November, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2 Chapter 6, Secs 1-3	3
4	5 Chapter 6, Secs 4- 5	6 lab8: Work and Energy	7 Chapter 6, Secs 6- 7	8	9 Chapter 6, Secs 8-9	10
11	12 No Class	13 lab 9: Energy in Simple Harmonic Motion	14 Review on Chapter 6 or mini Chapter 6 test	15	16 Quiz	17
18	19 Thanks Giving Break	20 Thanks Giving Break	21 Thanks Giving Break	22 Thanks Giving Break	23 Thanks Giving Break	24
25	26 Review on Chapter 6	27 Chapter 6 test	28 Final Review	29	30 Review or Project preparation	

## December, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 Review or Project preparation	4	5 Review or Project Demonstration	6 Academic Retreat	7 Final Exams	8
9	10 Final Exams	11 Final Exams	12 Final Exams	13 Winter Break	14 Winter Break	15
16	17 Winter Break	18 Winter Break	19 Winter Break	20 Winter Break	21 Winter Break	22
23	24 Winter Break	25 Winter Break	26 Winter Break	27	28	29



Name \_\_\_\_\_

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question

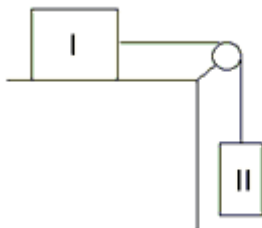
- 1) An object is moving with constant non-zero velocity in the  $+x$  axis. The velocity versus time graph of this object is \_\_\_\_\_  
 1) \_\_\_\_\_  
 A) a vertical straight line.  
 B) a straight line making an angle with the time axis.  
 C) a parabolic curve.  
 D) a horizontal straight line.
  
- 2) If the acceleration vector of an object is directed anti-parallel to the velocity vector, \_\_\_\_\_  
 2) \_\_\_\_\_  
 A) the object is moving in the negative  $x$ -direction.  
 B) the object is speeding up.  
 C) the object is slowing down.  
 D) the object is turning.
  
- 3) Mass and weight \_\_\_\_\_  
 3) \_\_\_\_\_  
 A) are two different quantities.  
 B) are both measured in kilograms.  
 C) are exactly equal.  
 D) both measure the same thing.
  
- 4) A 20-ton truck collides with a 1500-lb car and causes a lot of damage to the car. Since a lot of damage is done on the car \_\_\_\_\_  
 4) \_\_\_\_\_  
 A) the truck did not slow down during the collision.  
 B) the force on the truck is smaller than the force on the car.  
 C) the force on the truck is equal to the force on the car.  
 D) the force on the truck is greater than the force on the car.
  
- 5) Suppose that a car traveling to the East ( $+x$  direction) begins to slow down as it approaches a traffic light. Make a statement concerning its acceleration. \_\_\_\_\_  
 5) \_\_\_\_\_  
 A) The car is decelerating, and its acceleration is positive.  
 B) The acceleration is zero.  
 C) The car is decelerating, and its acceleration is negative.  
 D) A statement cannot be made using the information given.
  
- 6) Which one of the following is an example of a scalar quantity? \_\_\_\_\_  
 6) \_\_\_\_\_  
 A) displacement      B) force      C) acceleration      D) speed
  
- 7) Ignoring air resistance, the horizontal component of a projectile's acceleration \_\_\_\_\_  
 7) \_\_\_\_\_  
 A) continuously decreases.  
 B) is zero.  
 C) remains a non-zero constant.  
 D) continuously increases.
  
- 8) If the velocity versus time graph of an object is a straight line making an angle of 30 degrees with the time axis, the object is \_\_\_\_\_  
 8) \_\_\_\_\_  
 A) moving with infinite speed.  
 B) moving with constant non-zero speed.  
 C) moving with constant non-zero acceleration.  
 D) at rest.

- 9) A soccer ball is kicked with a velocity of 25 m/s at an angle of  $45^\circ$  above the horizontal. What is the vertical component of its acceleration as it travels along its trajectory? 9) \_\_\_\_\_
- A)  $(9.80 \text{ m/s}^2)$  upward  
B)  $(9.80 \text{ m/s}^2) \times \sin(45^\circ)$  downward  
C)  $(9.80 \text{ m/s}^2) \times \sin(45^\circ)$  upward  
D)  $9.80 \text{ m/s}^2$  downward
- 10) If the acceleration vector of an object is directed anti-parallel to the velocity vector, 10) \_\_\_\_\_
- A) the object is slowing down.  
B) the object is turning.  
C) the object is speeding up.  
D) the object is moving in the negative x-direction.
- 11) The resultant of two vectors is the smallest when the angle between them is 11) \_\_\_\_\_
- A)  $0^\circ$ .  
B)  $45^\circ$ .  
C)  $180^\circ$ .  
D)  $90^\circ$ .
- 12) If the velocity versus time graph of an object is a straight line making an angle of 30 degrees with the time axis, the object is 12) \_\_\_\_\_
- A) moving with infinite speed.  
B) at rest.  
C) moving with constant non-zero acceleration.  
D) moving with constant non-zero speed.
- 13) When you sit on a chair, the resultant force on you is 13) \_\_\_\_\_
- A) down.  
B) zero.  
C) up.  
D) depending on your weight.
- 14) If the net work done on an object is negative, then the object's kinetic energy 14) \_\_\_\_\_
- A) remains the same.  
B) decreases.  
C) increases.  
D) is zero.
- 15) Which one of the following is an example of a vector quantity? 15) \_\_\_\_\_
- A) distance  
B) mass  
C) area  
D) velocity
- 16) A new car manufacturer advertises that their car can go "from zero to sixty in 8 s". This is a description of 16) \_\_\_\_\_
- A) instantaneous speed.  
B) average acceleration.  
C) average speed.  
D) instantaneous acceleration.
- 17) Two cars collide head-on. At every moment during the collision, the magnitude of the force the first car exerts on the second is exactly equal to the magnitude of the force the second car exerts on the first. This is an example of 17) \_\_\_\_\_
- A) Newton's law of gravitation.  
B) Newton's first law.  
C) Newton's third law.  
D) Newton's second law.
- 18) Suppose a ball is thrown straight up, reaches a maximum height, then falls to its initial height. Make a statement about the direction of the velocity and acceleration as the ball is going up. 18) \_\_\_\_\_
- A) Both its velocity and its acceleration points downward.  
B) Both its velocity and its acceleration point upward.  
C) Its velocity points downward and its acceleration points upward.  
D) Its velocity points upward and its acceleration points downward.

- 19) You are traveling at 55 mi/h in the  $+x$  axis relative to a straight, level road and pass a car traveling at 45 mi/h. The relative velocity of your car to the other car is \_\_\_\_\_  
A) 65 mi/h.                      B) 35 mi/h.                      C) 10 mi/h.                      D) -10 mi/h.
- 20) A pilot drops a bomb from a plane flying horizontally at a constant speed. Neglecting air resistance, when the bomb hits the ground the horizontal location of the plane will \_\_\_\_\_  
A) be behind the bomb.  
B) be over the bomb.  
C) depend on the speed of the plane when the bomb was released.  
D) be in front of the bomb.
- 21) Objects A and B both start at rest. They both accelerate at the same rate. However, object A accelerates for twice the time as object B. What is the final speed of object A compared to that of object B? \_\_\_\_\_  
A) twice as fast    B) four times as fast  
C) three times as fast                                      D) the same speed
- 22) Suppose that a car traveling to the West ( $-x$  direction) begins to slow down as it approaches a traffic light. Make a statement concerning its acceleration. \_\_\_\_\_  
A) The car is decelerating, and its acceleration is negative.  
B) The car is decelerating, and its acceleration is positive.  
C) The acceleration is zero.  
D) A statement cannot be made using the information given.
- 23) A pilot drops a bomb from a plane flying horizontally at a constant speed. Neglecting air resistance, when the bomb hits the ground the horizontal location of the plane will \_\_\_\_\_  
A) be in front of the bomb.  
B) depend on the speed of the plane when the bomb was released.  
C) be behind the bomb.  
D) be over the bomb.
- 24) Three forces, each having a magnitude of 30 N, pull on an object in directions that are  $120^\circ$  apart from each other. Make a statement concerning the resultant force. \_\_\_\_\_  
A) The resultant force is zero.    B) The resultant force is greater than 30 N.  
C) The resultant force is less than 30 N.                                      D) The resultant force is equal to 30 N.
- 25) The force that keeps you from sliding on an icy sidewalk is \_\_\_\_\_  
A) weight.                      B) kinetic friction.                      C) normal force.                      D) static friction.

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

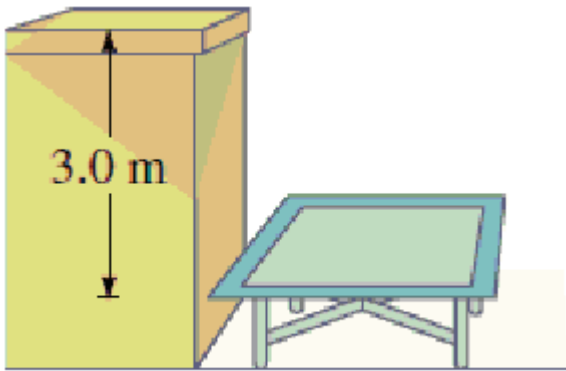
- 26) Two boxes are connected by a cord running over a pulley as shown in Fig. 4-5. Box I of mass  $m_1=5.0$  kg rest on the top of the table; the coefficient of kinetic friction between box I and the table is  $\mu_k=0.10$ . Box II has a mass of  $m_2=10.0$  kg. a) Draw the free-body diagrams for the two boxes, identifying all of the forces acting on each of the masses. b) Calculate the acceleration of the system. c) Calculate the tension in the cord



**FIGURE 4-5**

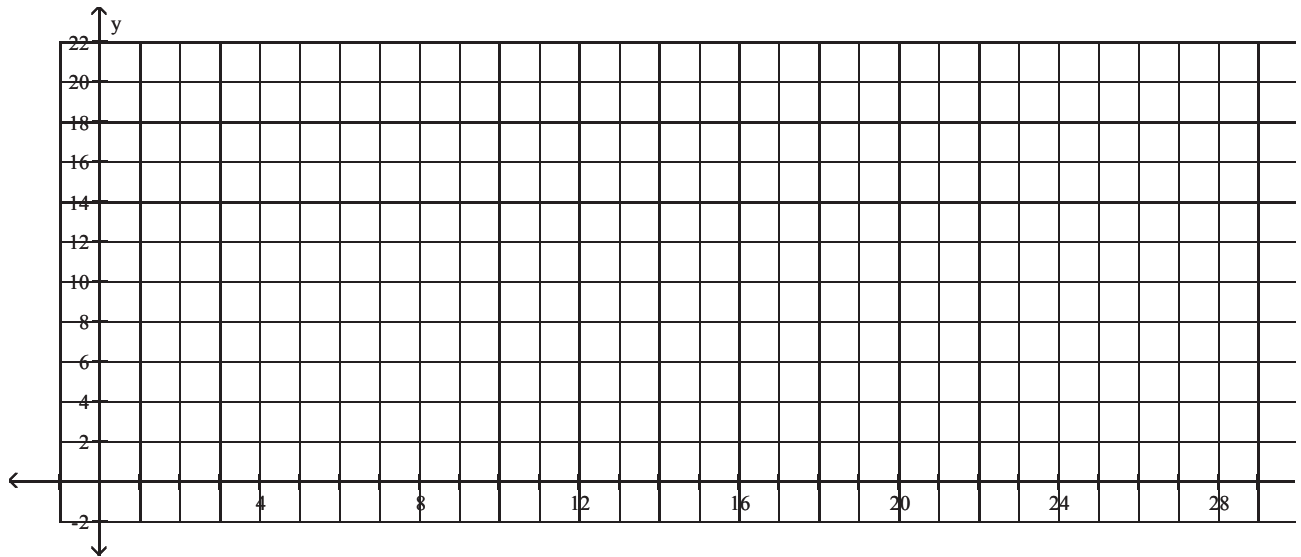


- 27) A 65-kg trampoline artist jumps vertically upward from the top of a platform with a speed of 5.0 m/s.
- how fast is he going as he lands on the trampoline, 3.0 m below?
  - If the trampoline behaves like a spring with spring stiffness constant  $6.2 \times 10^4$  N/m, how far does he depress it?



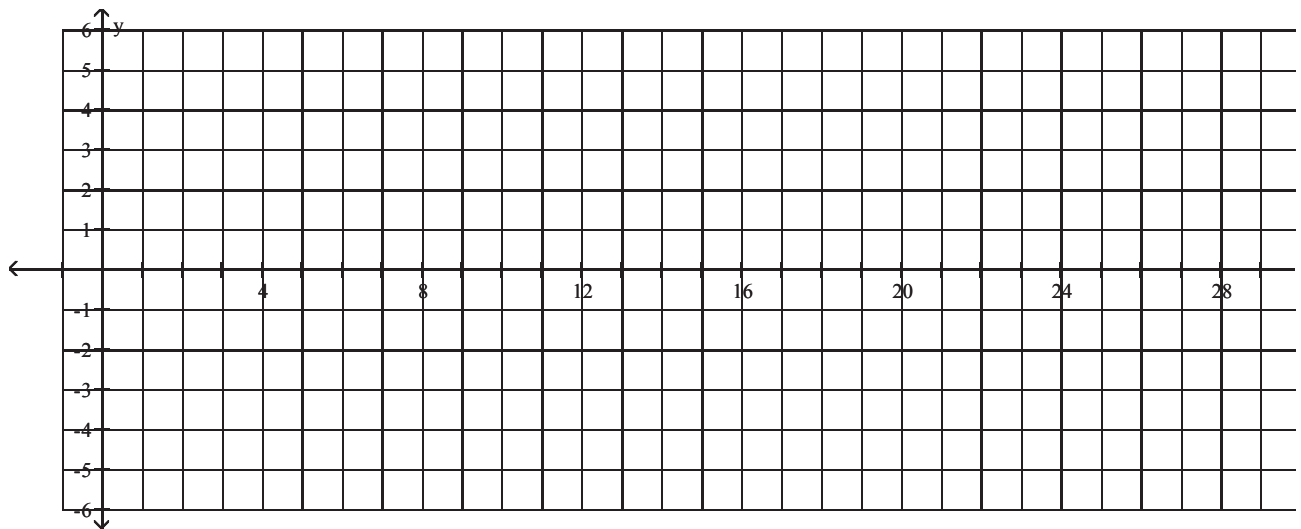
- 28) A car starts from rest and accelerate uniformly to  $15.0 \text{ m/s}$  in  $3.00$  seconds and maintain that velocity for another  $5.0$  seconds. Then a truck in front of the car slows down and the car deaccelerates with a constat rate of  $-1.00 \text{ m/s}^2$  for  $4.00$  seconds and then maintain that velocity for another  $15.0$  seconds. Finially the car deaccelerate to a stop in  $2.00$  seconds when it approaches to the destination .

a) what's the velocity vs. time graph?

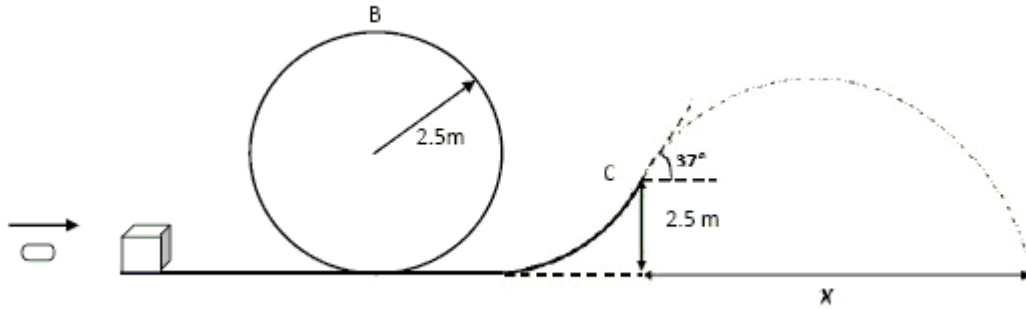


b) What's the total displacement of the car?

c) What's the acceleration vs. time graph?



- 29) A wooden block with initial velocity of  $12 \text{ m/s}$  will slide up the frictionless track with a circular loop with radius of  $2.5 \text{ m}$  in the middle. If the end of the track is at  $37^\circ$  angle respect to the horizontal and  $2.5 \text{ m}$  above the ground
- (a) What is the block's velocity at the Top of the track (point B) ?
  - (b) What is the block's velocity at the end of the track (point C)?
  - (c) How far from the end of the track will the bullet-block land (horizontal distance  $X$ )?



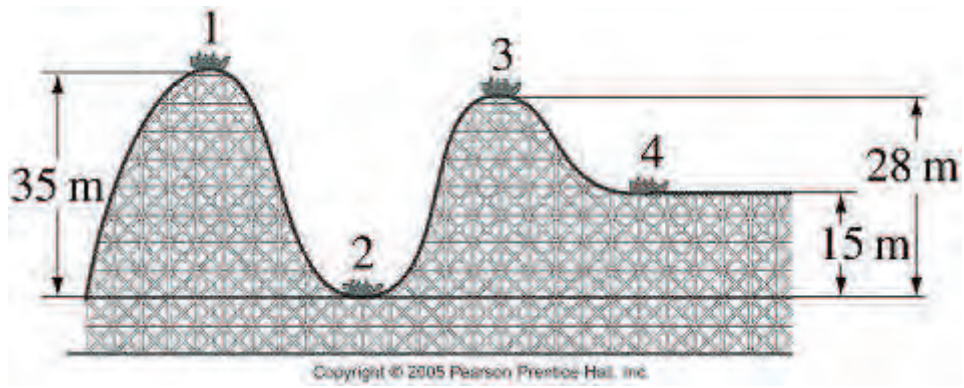


FIGURE 6-41

- 30) The roller-coaster car shown in Fig. 6-41 is dragged up to point 1 when it is released from rest. Assuming no friction, calculate the speed at points 2, 3, and 4.

- 31) Bonus (10 pc): An external force is applied at an angle of  $30.0^\circ$  above the positive x axis to a  $1.00\text{ kg}$ -box initially rest on a rough level surface with kinetic friction coefficient of  $0.100$ . After  $1.00\text{ second}$ , the box traveled  $4.9\text{ meters}$  along the positive x axis. Calculate the magnitude of the external forces. (Hint, find the the acceleration first. Then set the magnitude of the external forces as  $F$ , use trigonometry to get its x and y component and follow newton's 2nd law)

# 5 PROJECTILE MOTION

## 5.1 INTRODUCTION

You have probably watched a ball roll off a table and strike the floor. What determines where it will land? Could you predict where it will land? In this experiment, you will roll a ball down a ramp and determine the ball's velocity with two Photogates. You will use this information and your knowledge of physics to predict where the ball will land when it hits the floor.

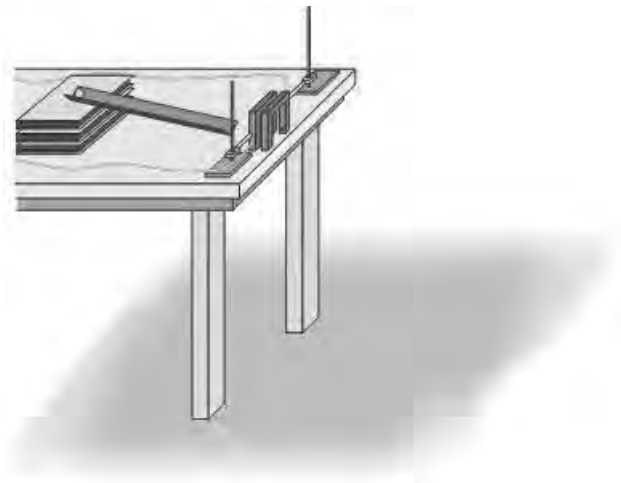


Figure 5.1: Experimental Setup

## 5.2 OBJECTIVES

- Measure the velocity of a ball using two Photogates.

- Apply concepts from two-dimensional kinematics to predict the impact point of a ball in projectile motion.
- Take into account trial-to-trial variations in the velocity measurement when calculating the impact point.

### 5.3 MATERIALS

	Manufacturer's Serial #	Student ID
LabQuest		
plumb bob		
ramp		
2 Vernier Photogates		
ring stand		
right-angle clamp		
ball (1 to 5 cm diameter)		
meter stick or metric measuring tape		
masking tape		
target (styrofoam cup)		

### 5.4 PROCEDURE

1. Set up a low ramp made of angle molding on a table so that a ball can roll down the ramp, across a short section of table, and off the table edge as shown in Figure 5.1.
2. Position the Photogates so the ball rolls through each of the Photogates while rolling on the horizontal table surface (but not on the ramp). Approximately center the detection line of each Photogate on the middle of the ball. To prevent accidental movement of the Photogates, use tape to secure the ring stands in place.
3. Mark a starting position on the ramp so that you can repeatedly roll the ball from the same place. Roll the ball down the ramp through the Photogate and off the table. Catch the ball as soon as it leaves

the table. Note: Do not let the ball hit the floor during these trials, or during the following velocity measurements. Make sure that the ball does not strike the side of the Photogates. Move the Photogates if necessary.

4. Set up the Photogates and LabQuest to collect data in Pulse Timing mode.
  - (a) Connect the Photogates to LabQuest and choose New from the File menu. If you have older sensors that do not auto-ID, manually set up the sensors. Note: Connect the sensors so that the ball first passes through the Photogate connected to DIG 1 and then passes through the Photogate connected to DIG 2.
  - (b) On the Meter screen, tap Mode. Change the Photogate Mode to Pulse Timing.
  - (c) You must enter the distance between Photogates in order for LabQuest to calculate the velocity. The program will divide this distance by the time interval  $\Delta t$  it measures to get the velocity ( $v = \Delta x / \Delta t$ ). Carefully measure the distance from the beam of Photogate 1 to the beam of Photogate 2. (It may be easier to measure from the leading edge of Photogate 1 to the leading edge of Photogate 2.) To successfully predict the impact point, you must enter an accurate measurement. Enter the distance between gates (in meters) as shown in Figure 5.2.

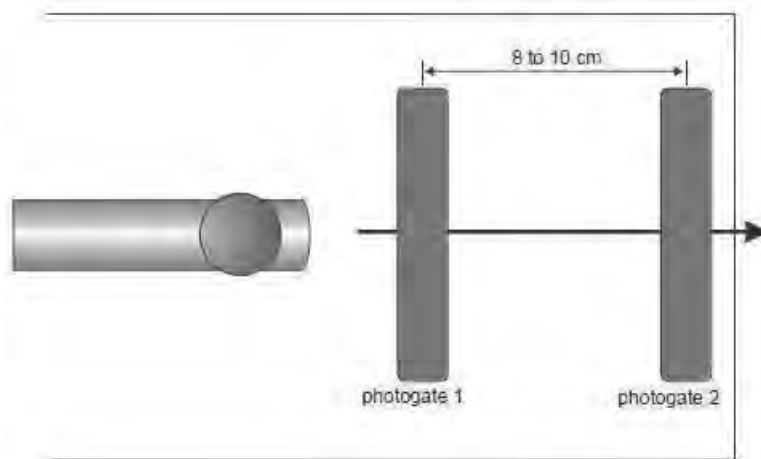


Figure 5.2: Distance between two photogates.

- (d) Select OK.



5. Observe the live readings. Block the Photogate 1 with your hand; note that the Photogate is shown as Blocked on the screen. Remove your hand and the display should change to Unblocked. Repeat for Photogate 2.
6. LabQuest will measure the length of time from when the first photogate is blocked until the second photogate is blocked. You can see how this works by blocking the gates briefly with your hand.
  - (a) Start data collection.
  - (b) Check to see that the Photogates are responding properly by moving your finger through Photogate 1 and then Photogate 2. LabQuest App will plot a time interval ( $\Delta t$ ) value for each instance you run your finger through Photogate 1 then through Photogate 2
  - (c) Stop data collection.
7. Collect data.
  - (a) Start data collection.
  - (b) Roll the ball from the mark on the ramp, through both Photogates, and catch the ball immediately after it leaves the table.
  - (c) Repeat nine times. Take care not to bump any of the Photogates, or your velocity data will not be precise. d. After the last trial, stop data collection.
8. Tap Table. Record the time (Time duration between Gate2 and Gate1 been blocked) and velocity for each pass through the photogates in the data table.
9. Inspect your velocity data. Did you get the same value every time? To determine the average, maximum, and minimum values, tap Graph, then choose Statistics ► Velocity from the Analyze menu. What one value would be most representative of all ten measurements?
10. Carefully measure the distance from the tabletop to the floor and record it as the table height,  $h$ , in the data table. Use a plumb bob to locate the point on the floor just beneath the point where the ball will leave the table (Figure 5.3). Mark this point with tape; it will serve as your *floor origin*.
11. Use your average velocity value to calculate the distance from the floor origin to the impact point where the ball will hit the floor. You will need to algebraically combine relationships for motion with constant acceleration

$$x_f - x_i = v_{ix} \cdot t + \frac{1}{2} \cdot a_x \cdot t^2 \quad (5.1)$$

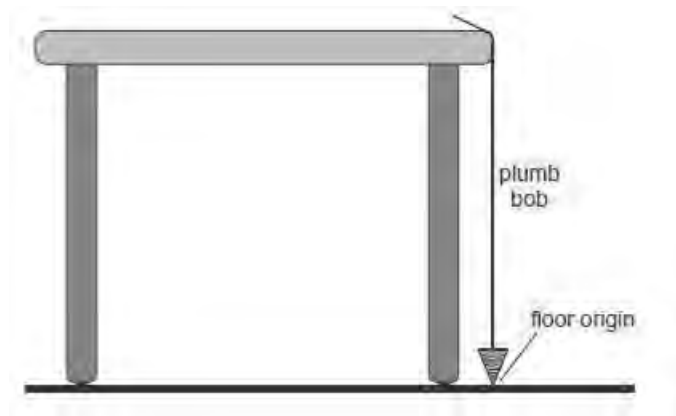


Figure 5.3: Diagram of Locating the point on the floor just beneath the point where the ball will leave the table.

$$y_f - y_i = v_{iy} \cdot t + \frac{1}{2} \cdot a_y \cdot t^2 \quad (5.2)$$

First, simplify the equations above. What is the value of the initial velocity in the vertical direction ( $v_{iy}$ )? What is the acceleration in the horizontal direction ( $a_x$ )? What is the acceleration in the vertical direction ( $a_y$ )? Remember that the time the ball takes to fall is the same as the time the ball flies horizontally. Use this information and the simplified equations to calculate how far the ball should travel horizontally during the fall. Record the value in your data table as the predicted impact point. Mark your predicted impact point on the floor with tape and position a target at the predicted impact point. Be sure the impact point is along the line of the track.

12. To account for the variations you saw in the Photogate velocity measurements, repeat the calculation in the preceding step for the minimum and maximum velocity. These two additional points show the limits of impact range that you might expect, considering the variation in your velocity measurement. Mark these points on the floor as well, and record the values in your data table.
13. Put the cup on the predicted impact point. After your instructor gives you permission, release the ball from the marked starting point, and let the ball roll off the table and onto the floor. Mark the point of impact with tape. Measure the distance from the floor origin to the actual impact and enter the distance in the data table.

## 5.5 DATA SHEET

Distance between two photogates=\_\_\_\_\_ (m)

Height of the table,  $h$ , =\_\_\_\_\_ (m)

Trail	1	2	3	4	5	6	7	8	9	10
Velocity ( $m/s$ )										
Maximum velocity										
Minimum velocity										
average velocity										

## 5.6 DATA ANALYSIS

1. Use the average velocity to calculate the distance from the floor origin to the impact point where the ball will hit the floor. First, simplify the Equations 5.1 and 5.2. What is the value of the initial velocity in the horizontal direction ( $v_{ix}$ ) and vertical direction ( $v_{iy}$ )? What is the acceleration in the horizontal direction ( $a_x$ )? What is the acceleration in the vertical direction ( $a_y$ )? Remember that the time the ball takes to fall,  $t$ , is the same as the time the ball flies horizontally. Use this information and the simplified equations to calculate how far the ball should travel horizontally during the fall. Record the value in your data table as the predicted impact point.

$v_{ix}$ (m/s)	$v_{iy}$ (m/s)	$a_x$ (m/s <sup>2</sup> )	$a_y$ (m/s <sup>2</sup> )	$y_f - y_i$ (m)	$t$ (s)	predicted impact point: $x_f - x_i$ (m)

2. Mark your predicted impact point on the floor with tape and position a target at the predicted impact point. Be sure the impact point is along the line of the track.
3. Repeat the calculation in the preceding step for the minimum velocity.

$v_{ix}$ (m/s)	$v_{iy}$ (m/s)	$a_x$ (m/s <sup>2</sup> )	$a_y$ (m/s <sup>2</sup> )	$y_f - y_i$ (m)	$t$ (s)	minimum predicted impact point: $x_f - x_i$ (m)

4. Repeat the calculation in the preceding step for the maximum velocity.

$v_{ix}$ (m/s)	$v_{iy}$ (m/s)	$a_x$ (m/s <sup>2</sup> )	$a_y$ (m/s <sup>2</sup> )	$y_f - y_i$ (m)	$t$ (s)	maximum predicted impact point: $x_f - x_i$ (m)

5. Put the cup on the predicted impact point. After your instructor gives you permission, release the ball from the marked starting point, and let the ball roll off the table and onto the floor. Mark the point of impact with tape. Measure the distance from the floor origin to the actual impact and enter the distance in the data table.

predicted impact point	minimum predicted impact point	maximum predicted impact point	actual impact point

## 5.7 DISCUSSION AND CONCLUSION

Analyze the results of your measurements in relation both to the purpose(s) stated in the introduction and your understanding.

## 5.8 POST-LABORATORY QUESTIONS

1. If the velocity of the ball right before it leaves the table is 2.0 m/s and the table is 0.75 meters high,
  - (a) How long does it take the ball to reach the ground?
  - (b) How far will it landed from the edge of the table?

## 5.9 PRE-LABORATORY ASSIGNMENT

1. If you were to drop a ball, releasing it from rest, what information would be needed to predict how much time it would take for the ball to hit the floor? What assumptions must you make?
2. If the ball in Question 1 is travelling at a known horizontal velocity when it starts to fall, explain how you would calculate how far it will travel horizontally before it hits the ground.
3. When an object passes through a Photogate, it blocks the passage of light from one side to the other. The interface can accurately measure the duration of time that a gate is blocked. If you wanted to know the velocity of the object, what additional information would you need?

## Appendix A

### Ohm's Law

Design and conduct an experiment to test the validity of Ohm's Law. Use multimeters, not the displays on the power supply, for your measurements. The teacher will show you how to use multimeters to measure voltage, current, and resistance.

A good experiment can be done with one power supply, two multimeters, some connecting wires, and two or more resistors used one at a time. In this experiment, do not use the power supply at more than 5.0 volts. Use resistors between  $100\ \Omega$  and  $5\ \text{k}\Omega$ . Do not combine resistors in one circuit. Think about what would be a reasonable number of measurements to make with each resistor.

Each person should turn in a typed or neatly written report containing the four main components of a scientific experiment.

- 1) Hypothesis: The hypothesis should state the goal or idea or prediction of the experiment. Mathematical aspects of the hypothesis should be in mathematical form rather than words. Variables should be defined.
- 2) Procedure: The procedure section should describe exactly what was done so that another person could do the same thing. It should include diagrams. There is no need to include obvious instructions such as "obtain" or "gather" materials.
- 3) Results and analysis: The analysis section should include tables of the data that was collected and all of the calculations.
- 4) Conclusion: The conclusion should state whether the experiment supported the hypothesis or not. Your percent error or percent difference should be discussed. Sources of error (factors outside your control) should also be discussed. Finally, this section should mention any possible improvements to your experiment.

The lab will be graded according to the rubric on the back, so make sure you understand the rubric.



Category	4	3	2	1
Experimental Hypothesis	Hypothesized relationship between the variables is clear and reasonable and is based on what has been studied	Hypothesized relationship has minor flaws in logic or is not clearly expressed, or is not completely based on what has been studied.	Hypothesized relationship is based on flawed logic or is very unclear	No hypothesis is stated
Variables (divide score by 2)	All variables are clearly defined with all relevant details.	All variables are clearly defined with most relevant details, or one variable is missing.	Most variables are clearly defined with most relevant details.	Variables are not defined or the majority lack sufficient detail.
Experimental Design	Experiment is feasible with available equipment and results will support or refute the hypothesis.	Experimental design is adequate to test the hypothesis but leaves some unanswered questions or has practical problems.	Experimental design is relevant to the hypothesis but does not test it completely or is very impractical.	Experimental design is not relevant to the hypothesis or is infeasible.
Replicability	Steps are outlined sequentially and are adequately detailed so that other experimenters can replicate them.	Steps are outlined but are hard to follow, or some details are missing.	Steps are outlined, but there is not enough detail to replicate the procedures, or some steps are missing.	Several steps are not outlined and there is not enough detail to replicate the procedures.
Data	The data are presented accurately, clearly, and informatively in tables and/or graphs. Any calculations are correct and easy to follow.	The data are presented accurately in tables and/or graphs and calculations are correct, but there is some lack of clarity in presentation of data and analysis.	The data are presented accurately and calculations are correct, but presentation is very unclear, possibly because of lack of tables and graphs.	Data and calculations are not shown or are inaccurate.
Conclusion	Conclusion includes whether the findings supported the hypothesis, major sources of error, and possible improvements.	Conclusion has two of the three elements needed or is somewhat unclear or poorly reasoned.	Conclusion has one of the three elements or is very unclear or poorly reasoned.	All three elements are missing or nearly so.

## Appendix B

### Electrostatics

#### Equipment

Balloon  
Styrofoam Cup and Plate  
Masking Tape  
Fur  
Styrofoam Peanuts  
Aluminum Pie Plate  
Scotch Tape  
Rubber Rod  
Electroscope  
Pith Balls (small, attached to a thread)  
String

#### Notes

This experiment investigates the idea of static electricity, that is, the separation of charges. Each step outlines what is to be done and also asks a question. Answer "What happens?" questions by describing what you observed. Answer "Why?" questions by explaining the motion or distribution of the charges. Assume everything is neutral at the beginning of the lab.

#### Procedure

- 1) Blow up a balloon. Rub it against the fur. How many Styrofoam peanuts can you pick up with the charged balloon? (The number does not affect your grade.) Sketch how the charges would have to be arranged on a balloon and a peanut in order for the peanut to be picked up.
- 2) Again rub the balloon against the fur. Can you cause the balloon to stick to the wall? a door? the chalkboard? a faucet? Try sticking it to other places. In general, where should the balloon stick and where should it not? Explain.
- 3) Tie about 40cm of string to the end of your balloon. Use masking tape to tape a Styrofoam cup, right side up, to the center of an aluminum pie plate. Then tape (use masking tape) a Styrofoam plate to your table. Vigorously rub the fur on the Styrofoam plate. Rub the balloon against the fur and then, holding it by the string, bring it close to the Styrofoam plate. Is the balloon attracted or repelled? Why?
- 4) Again charge the Styrofoam plate with the fur. Using the cup as a handle, place the aluminum plate on the Styrofoam plate. Touch your finger to the aluminum plate. What happens? Why?
- 5) Again charge the Styrofoam plate with the fur, and using the cup as a handle, place the aluminum plate on the Styrofoam plate. Lift the aluminum plate off the Styrofoam plate. Bring the charged balloon close to the aluminum plate. Do not let the balloon touch the aluminum plate or let sparks jump from one to the other. Do not set the plate down until you have done step 6). Does the aluminum plate attract or repel the charged balloon? Why?
- 6) Again touch the aluminum pie plate with your finger. Bring the charged balloon close to the aluminum

plate. Do not let the balloon touch the aluminum plate or let sparks jump from one to the other. Does the aluminum plate attract or repel the charged balloon? Why?

7) Pull a couple of strips of Scotch tape from a roll. Each one should be about 15 cm long. Hold them by their ends and slowly bring them close to each other. What happens? Why?

8) One at a time, pass each of the strips of tape lightly between your fingers. Then bring them close to each other. If passing them between your fingers worked, you have discharged the strips and they should neither be attracted nor repelled. If they're not, fully discharged, rub the dry sides against the faucet. Fold over a couple of centimeters of the end of each strip. This gives you a non-sticky handle to work with. Carefully stick the two strips to each other so that the sticky side of one piece adheres to the dry side of the other piece. (You will need to remember which piece is which for step 9.) Now rapidly pull the strips apart. Slowly bring them next to each other. What happens? Why?

9) Once more rub your balloon against the fur. Bring each strip close to the charged side of the balloon. Which strip of tape is negatively charged? How did that happen? So, when you pull a strip of Scotch tape off a roll is it positively or negatively charged?

10) Rub the rubber rod against the fur. Bring the rod close to a suspended pith ball. It should attract; why? Leave the rod in contact with the ball till something else happens. What happens? Why?

11) Rub the rubber rod against the fur. Touch the rod to the ball on the electroscope. What happens to the metal foils in the electroscope? Why?

12) Discharge your electroscope by touching the ball with your finger, or touching it to the faucet, if necessary. Rub the rubber rod against the fur. Bring the charged rod close to the top of the electroscope without touching it. What happens? Why?

13) Discharge your electroscope by touching it with your finger. Bring a negatively charged rod close to one side of the ball. Hold it close enough to have an effect but far enough so that sparks do not jump from the rod to the electroscope. While one person is holding the rod, have a second person briefly touch the opposite side of the ball. Now remove the rod. What happens? Why? (Do your best on this one, but the results are often puzzling to instructors too.)

14) Did the members of your group have any disagreements, possibly about how to carry out the steps or how to interpret the results? How did you resolve those disagreements?

## Appendix ~~B~~ C

# ELECTROMAGNETIC INDUCTION

## Transformers

### Introduction

The primary and secondary coils used in this experiment will demonstrate the principle of electromagnetic induction, or the induction of voltage by a change in a magnetic field. The primary and secondary coils consist of two coils and a core that are separable from each other. The “primary coil” means the one that is connected to the power supply. The outer coil has about 12.4 times as many turns as the inner one, but the manufacturer’s documentation says the ratio should be treated as 10:1. The set is designed to work best at low voltages.

### Equipment

Primary and Secondary Coils

Connecting Wires

Galvanometer

AC/DC Power Supply

Multimeters

### Procedure

- 1) Insert the inner coil into the outer coil. Connect the inner coil to a DC power supply and the outer coil to a galvanometer. Insert the metal cylinder into the inner coil. Set the dial on the power supply to some convenient spot that doesn’t make the power supply buzz. While depressing the left button on the galvanometer, so that the galvanometer becomes a sensitive ammeter (measuring the voltage across it divided by its resistance), turn the power supply switch on. Turn the switch off. (If your power supply doesn’t have an on-off switch, turn the power up quickly, then down quickly.) What happened? Why did this happen? Just explain qualitatively—the readings on the galvanometer are far from being numerically precise enough for an experiment like this. Explain changes in the direction the needle moved but not the directions themselves.
- 2) Now reverse the set-up so that the inner coil is connected to the galvanometer and the outer coil is connected to the power supply. Again turn the power supply switch on and then off while depressing the left button on the galvanometer. Try to use the same maximum voltage you used in step 1. What happened and how did it compare to what happened in step 1)? Why was there a difference? Explain differences in magnitude, not direction.
- 3) This set-up is a transformer. Formulate a hypothesis about its behavior when AC is supplied to it. Define your variables clearly, including the units they’re measured in and the instrument you’ll use to measure each.
- 4) Design and carry out an experiment to test your hypothesis. The transformer works better with the metal core in it. Do not use voltages above 16 V. Although the coils seem like short circuits, they have enough resistance so there’s no need for a resistor in series with them to limit the current.
- 5) Describe your experiment so that someone else could replicate it.
- 6) Present the results clearly, using tables or graphs as necessary.

7) Discuss whether your results supported your hypothesis and what improvements are possible. Steps 3–7 will be graded by the rubric used for the Ohm's Law lab.

## **Generators**

### **Introduction**

Generators and motors are similar devices with input and output reversed. Both involve wire loops in a magnetic field. In a generator, the wire loops are rotated through a magnetic field. The wire loop provides a conducting path for the charges as they are deflected at right angles by the magnetic field.

### **Equipment**

Genecon Generators (2)  
Banana Plugs or Connecting Wires  
Resistor (10  $\Omega$ )  
Multimeter  
Stopwatch

### **Procedure**

1) Study the inner construction of a Genecon generator. Note that it consists of a small dc motor whose armature shaft is connected to the hand crank via gears. Connect the leads of one Genecon to the leads of a second Genecon. Have one person hold the first Genecon while another person turns the crank on the second Genecon. What happens to the first Genecon when the crank on the second Genecon is turned: a) clockwise? b) counterclockwise? c) fast (but not as fast as you can)? d) slow? e) with the leads reversed. Explain why these things happen. (Explain changes in direction, not directions themselves.)

3) Connect the Genecon to the 10  $\Omega$  resistor. Connect the galvanometer or a multimeter in parallel across the resistor. Turn the crank on the Genecon at a steady speed in order to generate exactly (or as close as you can get) one volt. While one person is steadily cranking, have a second person time how long it takes to complete 10 or 15 full cranks (revolutions). Calculate the angular velocity of the cranking in revolutions per minute. Repeat for two volts and for three volts.

4) Graph angular velocity vs. voltage. Is the angular velocity directly proportional to the output voltage? Theoretically, should it be? Why?

Extra credit: If you had measured angular velocity as a function of resistance, you'd find that it was approximately inversely proportional. Can you explain this?



Appendix D  
Algebra-based Physics II  
Final Exam

Some parts depend on answers to earlier parts. If you can't do an early part, you can answer later parts in terms of the missing quantity. For instance, you could get full credit for an answer like " $y/(7.3\text{ s})$ ", where  $y$  was the answer to the previous part".

1. a) A refrigerator works on 120 V electricity and draws 10.0 A of current. What is its resistance?
- b) Suppose the refrigerator is part of the following circuit:  
How much total current is drawn?
- c) The motor of that refrigerator contains a coil with 400 turns. It's  $7.00 \cdot 10^{-2}$  m long and has a diameter of  $1.10 \cdot 10^{-3}$  m. What is the magnetic field inside the coil if all of the 10.0 A goes through it?
- d) At an instant when there's a 110 V potential difference between the hot wire and the neutral wire  $3.00 \cdot 10^{-3}$  m away, what is the strength of the electric field between the two wires?
- e) Your eye needs to focus on a child's drawing 1.40 m away from the lens in your eye. The image should fall on your retina, which is 2.50 cm behind the lens. What should the focal length of the lens be? (Technically, by "lens" I mean the combination of the lens and cornea.)
- f) If the object is 0.350 m tall, how tall will the image on the retina be? Will it be erect or inverted?
- g) When the refrigerator door is open, making a slit  $5.50 \cdot 10^{-4}$  m wide, light from the inside comes through. For some reason all of that light has a wavelength of  $4.50 \cdot 10^{-7}$  m. At what angle is the first dark fringe of the resulting pattern?
- h) How many photons of the above wavelength would give an energy of 11.0 eV?
- i) You tell the artist that he or she can have some ice cream from the refrigerator. The child runs to the refrigerator at a speed of  $0.970c$ . The sprint takes  $4.00 \cdot 10^{-8}$  s in your reference frame. How long does it take in the child's?
- j) The refrigerator contains a  $^{147}_{62}\text{Sm}$  atom which emits an alpha particle with a speed of  $9.00 \cdot 10^6$  m/s. The mass of an alpha particle is  $6.645 \cdot 10^{-27}$  kg. The alpha passes through a region where the magnetic field of a magnet stuck to the refrigerator is 7.30 T. What is the radius of the curve the alpha particle makes?
- k) What are the atomic number and mass number of the nucleus the samarium decays into?



l) The magnet falls off the refrigerator past a metal colander (or strainer) that was on the counter next to it. A certain horizontal square in the colander's wire mesh is 2.00 mm on a side. As the magnet fell, the vertically upward magnetic field through that square decreased from 0.00450 T to 0 in 0.700 s. What was the average emf around the square during that time?

m) In what direction, as seen from above, is the current induced around the wire square? Explain.

$$c = 3.00 \cdot 10^8 \text{ m/s} \quad h = 6.63 \cdot 10^{-34} \text{ J}\cdot\text{s} \quad \mu_0 = 4\pi \cdot 10^{-7} \text{ T}\cdot\text{m/A} \quad 1 \text{ eV} = 1.60 \cdot 10^{-19} \text{ J}$$

**Physics 122**  
**Solutions to Final Exam**

1. a)  $R = \frac{V}{A} = 12.0 \Omega$ .

b) In parallel, currents add, so  $I_{\text{tot}} = \frac{120 \text{ V}}{12 \Omega} + \frac{120 \text{ V}}{15 \Omega} + \frac{120 \text{ V}}{18 \Omega} = 24.7 \text{ A}$ .

c)  $B = \frac{\mu_0 I N}{l} = \frac{(4\pi \cdot 10^{-7} \text{ T} \cdot \text{m/A})(10.0 \text{ A})(400)}{7.00 \cdot 10^{-2} \text{ m}} = 7.18 \cdot 10^{-2} \text{ T}$ .

d)  $E = \frac{\Delta V}{\Delta s} = \frac{110 \text{ V}}{3.00 \cdot 10^{-3} \text{ m}} = 3.67 \cdot 10^4 \text{ V/m}$ . (N/C is also a correct unit.)

e)  $\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$ , so  $f = \frac{1}{1/d_o + 1/d_i} = \frac{1}{1/1.40 \text{ m} + 1/0.0250 \text{ m}} = 0.0246 \text{ m}$ .

f)  $m = -\frac{d_i}{d_o} = -0.0179$ , so the image height is  $(0.0179)(0.35 \text{ m}) = 6.25 \cdot 10^{-3} \text{ m}$ , and since  $m$  is negative, the image is inverted.

g) This is single-slit diffraction. The dark fringes are given by  $d \sin \theta = m\lambda$ . For the first fringe,  $m = 1$ , so  $\sin \theta = \frac{\lambda}{d} = \frac{4.50 \cdot 10^{-7} \text{ m}}{5.50 \cdot 10^{-4} \text{ m}} = 8.18 \cdot 10^{-4}$ , and  $\theta = \sin^{-1} 8.18 \cdot 10^{-4} = 0.0469^\circ$  or  $8.18 \cdot 10^{-4} \text{ rad}$ .

h)

i)  $\gamma = \frac{1}{\sqrt{1 - v^2/c^2}} = \frac{1}{\sqrt{1 - 0.97^2}} = 4.11$ .

Then  $t = \frac{t_0}{\gamma} = \frac{4.00 \cdot 10^{-8} \text{ s}}{4.11} = 9.73 \cdot 10^{-9} \text{ s}$ .

j)  $r = \frac{mv}{qB} = \frac{(6.645 \cdot 10^{-27} \text{ kg})(9.00 \cdot 10^6 \text{ m/s})}{2(1.60 \cdot 10^{-19} \text{ C})(7.30 \text{ T})} = 0.0256 \text{ m}$ .

k)  ${}^{147}_{62}\text{Sm} \rightarrow {}^4_2\text{He} + {}^{143}_{60}\text{Nd}$ .

l) As there's only 1 turn ( $N = 1$ ), we have

$\mathcal{E} = \frac{\Delta \Phi}{\Delta t} = \frac{A \Delta B}{\Delta t} = \frac{(2.00 \cdot 10^{-3} \text{ m})^2 (0.00450 \text{ T})}{0.700 \text{ s}} = 2.57 \cdot 10^{-8} \text{ V}$ .

m) To maintain an upward field that decreases, the induced field must be upward. The right-hand rule gives a counterclockwise current as seen from above.



- Relativistic kinetic energy is  $KE_{\text{rel}} = (\gamma - 1)mc^2$ , where  $\gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$ . At low velocities, relativistic kinetic energy reduces to classical kinetic energy.
- No object with mass can attain the speed of light because an infinite amount of work and an infinite amount of energy input is required to accelerate a mass to the speed of light.
- The equation  $E^2 = (pc)^2 + (mc^2)^2$  relates the relativistic total energy  $E$  and the relativistic momentum  $p$ . At extremely high velocities, the rest energy  $mc^2$  becomes negligible, and  $E = pc$ .

## Conceptual Questions

### 28.1 Einstein's Postulates

- Which of Einstein's postulates of special relativity includes a concept that does not fit with the ideas of classical physics? Explain.
- Is Earth an inertial frame of reference? Is the Sun? Justify your response.
- When you are flying in a commercial jet, it may appear to you that the airplane is stationary and the Earth is moving beneath you. Is this point of view valid? Discuss briefly.

### 28.2 Simultaneity And Time Dilation

- Does motion affect the rate of a clock as measured by an observer moving with it? Does motion affect how an observer moving relative to a clock measures its rate?
- To whom does the elapsed time for a process seem to be longer, an observer moving relative to the process or an observer moving with the process? Which observer measures proper time?
- How could you travel far into the future without aging significantly? Could this method also allow you to travel into the past?

### 28.3 Length Contraction

- To whom does an object seem greater in length, an observer moving with the object or an observer moving relative to the object? Which observer measures the object's proper length?
- Relativistic effects such as time dilation and length contraction are present for cars and airplanes. Why do these effects seem strange to us?
- Suppose an astronaut is moving relative to the Earth at a significant fraction of the speed of light. (a) Does he observe the rate of his clocks to have slowed? (b) What change in the rate of Earth-bound clocks does he see? (c) Does his ship seem to him to shorten? (d) What about the distance between stars that lie on lines parallel to his motion? (e) Do he and an Earth-bound observer agree on his velocity relative to the Earth?

### 28.4 Relativistic Addition of Velocities

- Explain the meaning of the terms "red shift" and "blue shift" as they relate to the relativistic Doppler effect.
- What happens to the relativistic Doppler effect when relative velocity is zero? Is this the expected result?
- Is the relativistic Doppler effect consistent with the classical Doppler effect in the respect that  $\lambda_{\text{obs}}$  is larger for motion away?
- All galaxies farther away than about  $50 \times 10^6$  ly exhibit a red shift in their emitted light that is proportional to distance, with those farther and farther away having progressively greater red shifts. What does this imply, assuming that the only source of red shift is relative motion? (Hint: At these large distances, it is space itself that is expanding, but the effect on light is the same.)

### 28.5 Relativistic Momentum

- How does modern relativity modify the law of conservation of momentum?
- Is it possible for an external force to be acting on a system and relativistic momentum to be conserved? Explain.

### 28.6 Relativistic Energy

- How are the classical laws of conservation of energy and conservation of mass modified by modern relativity?
- What happens to the mass of water in a pot when it cools, assuming no molecules escape or are added? Is this observable in practice? Explain.
- Consider a thought experiment. You place an expanded balloon of air on weighing scales outside in the early morning. The balloon stays on the scales and you are able to measure changes in its mass. Does the mass of the balloon change as the day progresses? Discuss the difficulties in carrying out this experiment.
- The mass of the fuel in a nuclear reactor decreases by an observable amount as it puts out energy. Is the same true for the coal and oxygen combined in a conventional power plant? If so, is this observable in practice for the coal and oxygen? Explain.
- We know that the velocity of an object with mass has an upper limit of  $c$ . Is there an upper limit on its momentum? Its energy? Explain.
- Given the fact that light travels at  $c$ , can it have mass? Explain.
- If you use an Earth-based telescope to project a laser beam onto the Moon, you can move the spot across the Moon's surface at a velocity greater than the speed of light. Does this violate modern relativity? (Note that light is being sent from the Earth to the Moon, not across the surface of the Moon.)



## Appendix F

### Sample Quantitative Reasoning question

Is the given answer correct? If not, what are the errors?

Q: In a circuit with a 12 V source in series with a 30  $\Omega$  light bulb and a 10  $\Omega$  light bulb, which light bulb shines brighter? Assume these are incandescent bulbs, which behave as resistors, and that the bulb drawing more power is brighter. [This will be accompanied with a diagram.]

A: Bulb 1, because it has lower resistance and thus draws more current and more power.

The answer is that the response is incorrect because circuit elements in series all have the same current through them. Thus we can use  $P = I^2 R$  and the power is proportional to  $R$ , so bulb 2 draws more power.

### Sample Sustainability question

Suppose an accident occurred at a nuclear reactor. Between the common fission products Ba-140 and Cs-137, which presents more danger a few days after the accident? Which presents more danger ten years after the accident? Explain briefly, using the data in your textbook.

Scoring: 3 points for giving the correct answer that Ba-140 is more dangerous right after the accident, whereas Cs-137 is more dangerous ten years later, and 2 points for connecting that to their half-lives.



Write the name of each formula on the appropriate blank.

1.  $Q3 - Q1$  \_\_\_\_\_

2.  $\frac{\sum |x - \mu|}{n}$  \_\_\_\_\_

3.  $\frac{\sum n}{n}$  \_\_\_\_\_

4.  $\mu$  \_\_\_\_\_

5.  $Q3 + 3 * IQR$  and  $Q1 - 3 * IQR$  \_\_\_\_\_

6.  $\sigma$  \_\_\_\_\_

7. Mean - Median \_\_\_\_\_

8.  $\frac{x - \mu}{\sigma}$  \_\_\_\_\_

9.  $Q3 + 1.5 * IQR$  and  $Q1 - 1.5 * IQR$  \_\_\_\_\_

10.  $\sqrt{\frac{\sum (x - \mu)^2}{n - 1}}$  or  $\sqrt{\frac{\sum (x - \mu)^2}{n}}$  \_\_\_\_\_

11. Max - Min \_\_\_\_\_

12.  $\frac{\sum (x - \mu)^2}{n - 1}$  or  $\frac{\sum (x - \mu)^2}{n}$  \_\_\_\_\_

Mean  
Range  
Mean  
MAD  
Variance  
Mode  
Standard Deviation  
Z-score  
Skew  
Interquartile range (IQR)  
Mild Outlier  
Extreme Outlier



Write the name of each formula on the appropriate blank.

1.  $\sigma^2$  \_\_\_\_\_

Mean or Expected Value (of a discrete random variable)

2.  $\sigma = \sqrt{\sigma^2}$  \_\_\_\_\_

Variance (of a discrete random variable)

3.  $E(X) = \sum x * p(x)$  \_\_\_\_\_

Standard Deviation (of a discrete random variable)

4.  $\mu$  \_\_\_\_\_

5.  $V(X) = \sum (x - \mu)^2 * p(x)$  \_\_\_\_\_

6.  $\sigma$  \_\_\_\_\_

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Write the name of each formula on the appropriate blank.

1. Mean:  $\mu$   
Variance:  $\sigma^2$  \_\_\_\_\_

Binomial Distribution

Poisson Distribution

2. Mean:  $\mu = E(X) = n * p$   
Variance:  $\sigma^2 = Var(X) = n * p * (1 - p)$  \_\_\_\_\_

Normal Distribution

3. Mean:  $E(x) = \mu$   
Variance:  $\sigma^2 = Var(x) = \mu$  \_\_\_\_\_

Write the name of each formula on the appropriate blank.

1.  $\beta$  \_\_\_\_\_

Null Hypothesis

2.  $z * \frac{\sigma}{\sqrt{n}}$  \_\_\_\_\_

Alternative Hypothesis

Probability of a type I error

3.  $H_0$  \_\_\_\_\_

Probability of a type II error

Power of a test

4.  $\left( \bar{x} - z * \frac{\sigma}{\sqrt{n}}, \bar{x} + z * \frac{\sigma}{\sqrt{n}} \right)$  \_\_\_\_\_

Margin of error (MOE)

Confidence interval

5.  $H_a$  \_\_\_\_\_

6.  $1 - \beta$  \_\_\_\_\_

7.  $\alpha$  \_\_\_\_\_

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Write the name of each formula on the appropriate blank.

1.  $\frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$  \_\_\_\_\_

t-confidence interval

t-statistic

2.  $\left( \bar{x} - t * \frac{\mu}{\sqrt{n}}, \bar{x} + t * \frac{\mu}{\sqrt{n}} \right)$  \_\_\_\_\_

Write the name of each formula on the appropriate blank.

- |  |                      |
|--|----------------------|
| 1. Regression Degrees of Freedom _____ | SAE                  |
|  | SSE                  |
| 2. Total Sum of Squares _____          | SSR                  |
|  | MSE                  |
| 3. Regression Sum of Squares _____     | $n - p$              |
|  | Square root of (MSE) |
| 4. Residual Sum of Squares _____       | MSR                  |
|  | $p - 1$              |
| 5. Residual Degrees of Freedom _____   | SSTO                 |
|  | $n - 1$              |
| 6. Residual Mean Square _____          |                      |
| 7. Regression Mean Square _____        |                      |
| 8. Total Degrees of Freedom _____      |                      |
| 9. Residual Standard Error _____       |                      |
| 10. Sum of the Absolute Errors _____   |                      |

**Indicate whether the items are likely processed preattentively or consciously. Circle your answer.**

1. Comparing Percentages

- (a) Preattentive
- (b) Conscious

2. Comparing Sizes

- (a) Preattentive
- (b) Conscious

**Indicate whether the items are Quantitative or Categorical types of data. Circle your answer.**

3. Children's age

- (a) Quantitative
- (b) Categorical

4. Children's eye color

- (a) Quantitative
- (b) Categorical

**Indicate whether the items are Nominal or Ordinal types of data. Circle your answer.**

5. Sizes of Coffees (short, tall, grande)

- (a) Nominal
- (b) Ordinal

6. Selecting favorite flavor of candy (1-chocolate, 2-toffee, 3-peppermint, 4-peanut butter)

- (a) Nominal
- (b) Ordinal

**Indicate whether the items are Continuous or Discrete types of data. Circle your answer.**

7. The number of breaths you take in a day.

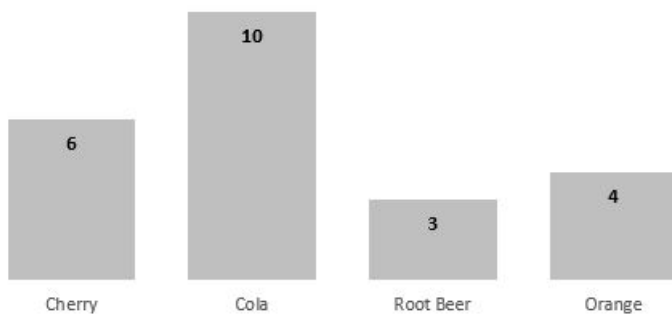
- (a) Continuous
- (b) Discrete

8. The number of ounces you drink in a day.

- (a) Continuous
- (b) Discrete

Answer the following questions based on the given Graph.

Number of Soda Flavors in 100s



Analysis of Quantitative Arguments: Students learn how to interpret and analyze data presented in multiple ways including bar charts, pie charts, scatter plots, dot plots, line charts, histograms, box plots, and spread sheets

9. What is the number of Orange? \_\_\_\_\_
10. If Grape was added to the chart and its data set was 800, what would the Grape bar chart show? \_\_\_\_\_  
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11. What is the Mean, Median and Mode of 4,6,7,9,7?
- Mean \_\_\_\_\_
  - Median \_\_\_\_\_
  - Mode \_\_\_\_\_
12. Which is more appropriate if there are outliers in the data set, Median or Mean?
13. What is the Maximum, Minimum, Range, MAD, Variance and the Standard Deviation of 14,17,25,28?
- Maximum \_\_\_\_\_
  - Minimum \_\_\_\_\_
  - Range \_\_\_\_\_
  - MAD \_\_\_\_\_
  - Variance \_\_\_\_\_

- Standard Deviation \_\_\_\_\_

14. Fill in the blank: The larger the standard deviation is the \_\_\_\_\_.

15. Write the percentage that each standard deviation represents.

- 1 Standard Deviation \_\_\_\_\_

- 2 Standard Deviations \_\_\_\_\_

- 3 Standard Deviations \_\_\_\_\_

16. Fill in the blank: In order to use the Empirical Rule the data must be \_\_\_\_\_.

17. Answer the following questions based on the mean of data set A is 35 and the standard deviation is 6.

- What percentage of A is between 23 and 35? \_\_\_\_\_

- What percentage of A is below 29? \_\_\_\_\_

- What percentage of A is between 17 and 53? \_\_\_\_\_

- What percentage of A is between 23 and 47? \_\_\_\_\_

- Is a value of 15 considered unusual? \_\_\_\_\_

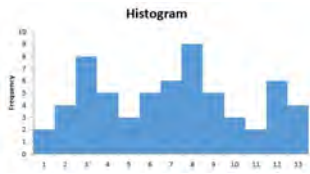
18. Answer the following questions based on the fact that the mean height of an adult female giraffe is 15 ft with a standard deviation of 4.2 ft.

- What is the z-score of a female giraffe that is 14.3 ft? \_\_\_\_\_

- Would a female giraffe that is 14.3 ft be considered unusual? \_\_\_\_\_

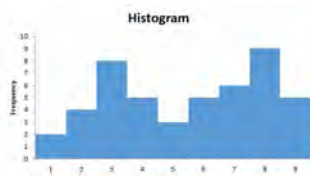
- What is the z-score of a female giraffe that is 25 ft? \_\_\_\_\_
- Would a female giraffe that is 25 ft be considered unusual? \_\_\_\_\_

19. Write the type of histogram in the blank provided.

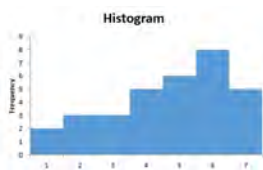


\_\_\_\_\_

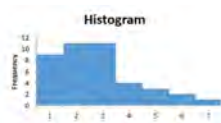
Unimodal  
Bimodal  
Multimodal  
Negative Skew  
Positive Skew



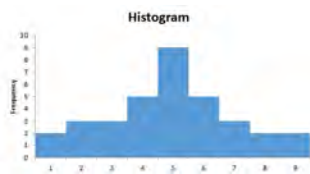
\_\_\_\_\_



\_\_\_\_\_

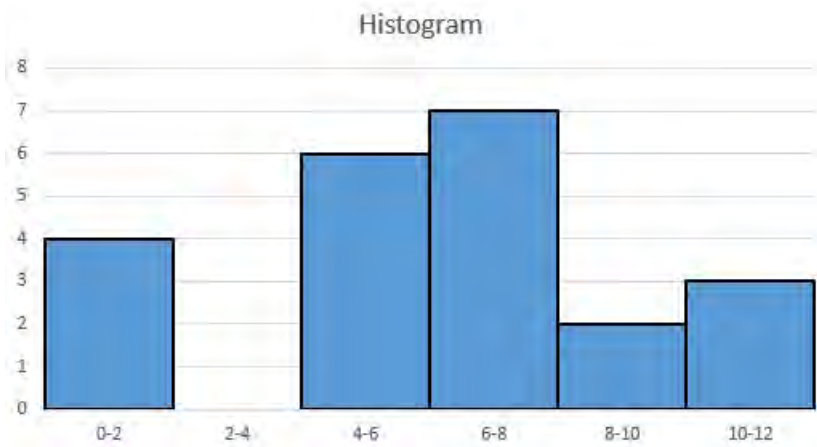


\_\_\_\_\_



\_\_\_\_\_

20. Answer the following questions based on the given histogram.



- What is the frequency of bin 4-6? \_\_\_\_\_
- Which bin has the lowest frequency? \_\_\_\_\_
- Which bin has a frequency of 2? \_\_\_\_\_
- (True or False) The frequency for bin 2-4 is unknown? \_\_\_\_\_
- In which bin would the value of 8 be placed? \_\_\_\_\_



**Circle your answer to the following.**

21. What is a subset of all possible results consisting of more than one result?

- (a) experiment
- (b) outcome (and also an event)
- (c) compound event
- (d) simple event
- (e) sample space

22. What is the result of a procedure?

- (a) experiment
- (b) outcome (and also an event)
- (c) compound event
- (d) simple event
- (e) sample space

23. What is a procedure that results in one out of a number of possibilities?

- (a) experiment
- (b) outcome (and also an event)
- (c) compound event
- (d) simple event
- (e) sample space

24. What is the set of all possible results?

- (a) experiment
- (b) outcome (and also an event)
- (c) compound event
- (d) simple event
- (e) sample space

25. What is a subset of all possible results consisting of one result?

- (a) experiment
- (b) outcome (and also an event)
- (c) compound event
- (d) simple event
- (e) sample space

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26. A random variable is a rule that assigns a

- (a) number to every outcome in the sample space of an experiment.
- (b) name to every outcome in the sample space of an experiment.
- (c) message to every outcome in the sample space of an experiment.

Indicate if the following represents a random variable.

27. A survey asks a participant to indicate the number of people which live in their house.  $X$  is assigned the value of the response.
- (a)  $X$  is a random variable
  - (b)  $X$  is not a random variable
28. A survey asks a participant to indicate their favorite restaurant.  $X$  is assigned the value of the response.
- (a)  $X$  is a random variable
  - (b)  $X$  is not a random variable
29. Find the missing value for the probability mass function table

$x$	0	1	2	3
$p(x)$	0.15		0.26	0.41

30. Use the given probability mass function table to answer the following questions.

$x$	0	1	2	3
$p(x)$	0.23	0.25	0.18	0.34

- (a) What is  $P(X = 3)$ ? \_\_\_\_\_
  - (b) What is  $P(X \leq 2)$ ? \_\_\_\_\_
  - (c) What is  $P(X > 2)$ ? \_\_\_\_\_
31. A cumulative distribution function (cdf)  $F(4)$  would be the same as which of the following?
- (a)  $P(X = 4)$
  - (b)  $P(X > 4)$
  - (c)  $P(X < 4)$
  - (d)  $P(X \leq 4)$
  - (e)  $P(X \geq 4)$
32. Expected Value is the same as
- (a) standard deviation
  - (b) variance
  - (c) mean
  - (d) median
  - (e) mode

33. Use the given table to answer the following questions.

x	5	10	15	20
p(X)	0.35	0.15	0.45	0.05

(a) Create the standard deviation table.

(b) What is the variance? \_\_\_\_\_

(c) What is the standard deviation? \_\_\_\_\_

34. Use the given binomial distribution chart of 5 trials each with a probability of 0.4 to answer the following questions.

x	0	1	2	3	4	5
P(x)	0.16807	0.36015	0.3087	0.1323	0.02835	0.00243

(a) What is  $P(X = 4)$ ? \_\_\_\_\_

(b) What is  $P(X \leq 3)$ ? \_\_\_\_\_

(c) What is  $P(X > 4)$ ? \_\_\_\_\_

(d) What is the expected mean of  $X = 3$ ? \_\_\_\_\_

(e) What is the expected mean of  $X = 5$ ? \_\_\_\_\_

35. What is the difference between binomial and normal distributions?

36. What is the poisson distribution used for?

37. Order matters for \_\_\_\_\_.

38.  $0! =$  \_\_\_\_\_

39. Calculate  $P_{10,5}$  \_\_\_\_\_

40. Calculate  $C_{9,4}$  \_\_\_\_\_

41. How many different groups of 7 can be made out of 11 different people?

42. In how many ways can 4 people be lined up?

43. In how many ways can 20 items taken 8 at a time where order matters?

**Is the following likely to be a hypothesis? Circle your answer.**

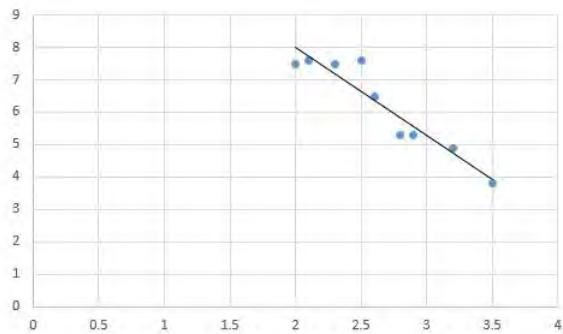
44. The more one eats candy, the more cavities one has on their teeth.

- (a) Hypothesis
- (b) Not a hypothesis

45. Eat less candy to have less cavities.

- (a) Hypothesis
- (b) Not a hypothesis

**The given sample line has a ...**



46.

- (a) Positive Correlation
- (b) Negative Correlation
- (c) No Correlation

**Circle the correct answer for the following questions.**

47. A hypothesis is an educated guess about something in the world around you. It should be testable, either by experiment or observation.
- (a) True
  - (b) False
48. A hypothesis that says there is a statistical significance between the two variables in the hypothesis is
- (a) a null hypothesis
  - (b) an alternative hypothesis
49. A hypothesis that says there is no statistical significance between the two variables in the hypothesis is
- (a) a null hypothesis
  - (b) an alternative hypothesis
50. A null hypothesis is initially assumed to be true.
- (a) True
  - (b) False
- Problem Setting: Students learn how to state a null and alternative hypothesis given a situation context.
51. Initial data from a sample of 400 people suggests that drinking "Soda A" over a long period of time increases the chances of cancer. What is the null hypothesis?
- (a) Drinking "Soda A" over a long period of time increases the chances of cancer.
  - (b) Drinking "Soda A" over a long period of time decreases the chances of cancer.
  - (c) Drinking "Soda A" over a long period of time does not increase the chances of cancer.
52. Initial data from a sample of 400 people suggests that drinking "Soda A" over a long period of time increases the chances of cancer. What is the alternative hypothesis?
- (a) Drinking "Soda A" over a long period of time increases the chances of cancer.
  - (b) Drinking "Soda A" over a long period of time decreases the chances of cancer.
  - (c) Drinking "Soda A" over a long period of time does not increase the chances of cancer.

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A study seeks to determine whether Cadets earn higher grades if they sleep 8 hours each night. 200 cadets are randomly selected and assigned to group A or B. Group A is required to maintain the current amount of sleep each night. Group B is required to sleep 8 hours each night for a semester. Grades at the end of the semester are then analyzed. Indicate which is the following parts of the scenario.

53. All NMMI cadets

- (a) Control Group
- (b) Treatment Group
- (c) Population
- (d) Sample

54. 200 randomly selected cadets

- (a) Control Group
- (b) Treatment Group
- (c) Population
- (d) Sample

55. 100 cadets who maintain the current sleep schedule

- (a) Control Group
- (b) Treatment Group
- (c) Population
- (d) Sample

56. 100 cadets who sleep 8 hours each night

- (a) Control Group
- (b) Treatment Group
- (c) Population
- (d) Sample

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**Circle the correct answer for the following questions**

57. The question of statistical significance is ...
- (a) Are the sample sizes big enough?
  - (b) Are the samples diverse enough for the population?
  - (c) Are the sample statistics extreme enough to infer a conclusion about the population?
58. The smaller the P-value computed from sample data, the stronger the evidence against H.
- (a) True
  - (b) False
59. A high P-value is a good indication that your results are not due to random chance.
- (a) True
  - (b) False
60. The larger the significance ( $\alpha$ ) the larger the chance of a probability of a type I error.
- (a) True
  - (b) False
61. If P-value  $> \alpha$  then fail to reject  $H_0$ .
- (a) True
  - (b) False
62. If we reject a null hypothesis when it is actually true, the type of error made was a
- (a) type I error
  - (b) type II error
  - (c) no error was made
63. If we fail to reject a null hypothesis when it is actually false, the type of error made was a
- (a) type I error
  - (b) type II error
  - (c) no error was made
64. If we reject a null hypothesis when it is actually false, the type of error made was a
- (a) type I error
  - (b) type II error
  - (c) no error was made
65. If we fail to reject a null hypothesis when it is actually true, the type of error made was a
- (a) type I error
  - (b) type II error
  - (c) no error was made

66. Suppose the significance level  $\alpha$  of a test is  $\alpha = 0.2\%$  and the P-value =  $0.3\%$ . Which is correct?
- (a) Reject  $H_0$
  - (b) Fail to reject  $H_0$
67. Suppose the significance level  $\alpha$  of a test is  $\alpha = 0.01\%$  and the P-value =  $0.009\%$ . Which is correct?
- (a) Reject  $H_0$
  - (b) Fail to reject  $H_0$
68. Suppose the significance level  $\alpha$  of a test is  $\alpha = 0.01\%$  and the P-value =  $0.03\%$ . What is the probability of making a type I error for this test?
- (a) 0.03
  - (b) 0.01
  - (c) unknown
69. Suppose the significance level  $\alpha$  of a test is  $\alpha = 0.01\%$  and the P-value =  $0.03\%$ . What is the probability of making a type II error for this test?
- (a) 0.03
  - (b) 0.01
  - (c) unknown

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**Circle the correct answer for the following questions**

70. To interpret the 90% confidence interval of (4,6), one is 90% confident that
- (a) The sample mean is in the interval
  - (b) The population mean is in the interval
71. Can one say, "The probability the population mean is in the interval is 90%"
- (a) Yes
  - (b) No
72. On average, what proportion of potential 90% confidence intervals would include the population mean?
- (a) 90%
  - (b) 10%
  - (c) 100%



73. Which significance level ( $\alpha$ ) should be used if a confidence level of 95% is wanted?

- (a) 0.10
- (b) 0.5
- (c) 0.05
- (d) 0.01

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**Answer the following questions based on the scenario.**

The grades of 10 students who are randomly selected are 84, 96, 84, 89, 65, 79, 86, 91, 94, 95. The population standard deviation is 6.5.

$\alpha$	$z^*$ (one-tailed)	$z^*$ (two-tailed)
0.10	1.282	1.645
0.05	1.645	1.960
0.01	2.326	2.576

74. What is the sample mean? \_\_\_\_\_

Evidence Evaluation: After running statistical tests on given data sets, students learn how to evaluate the statistical tests based on the situation context.

75. What is the two-tailed margin or error at the 0.05 significance level? \_\_\_\_\_

76. Using the two-tailed margin or error at the 0.05 significance level, what is the confidence interval? \_\_\_\_\_

**Circle the correct answer for the following multiple choice questions.**

77. A regression line

- (a) is commonly used to make predictions
- (b) is a line drawn through two quantitative variables data points
- (c) all of the above

78. Label each with the correct answer: { response, predictor}

- (a) the X in a regression line is the \_\_\_\_\_ variable
- (b) the Y in a regression line is the \_\_\_\_\_ variable

79. Assume that a regression model is given by  $E(Y) = 3X^2 + 6X - 12$ . What would one expect to get for  $E(Y)$  if  $X$  is 25?

80. Knowing the value of one regression error provides \_\_\_\_\_ information about the value of another regression error.
- (a) no
  - (b) all
  - (c) some
  - (d) complete
81. A simple linear regression residual is the same as
- (a) the x-value
  - (b) the y-value
  - (c) the error
  - (d) the mean
  - (e) all of the above

82. Given the following table of data fill in the Residual column and calculate the SAE and the SSE.

$X$	$Y$	Regression $E(Y)$	Residual
3	12	15	
5	20	16	
7	18	19	
8	22	20	

**Given the scenario answer the following multiple choice questions:**

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**Scenario: A data set has 30 data points. The t-statistic for the simple linear regression is  $t = 54$  with a P-value of 0.07. The significance level is 0.05.**

83. Is the simple linear regression going to be negative or positive?
- (a) Negative
  - (b) Positive
84. What is the null hypothesis for testing whether a linear relationship exists between  $X$  and  $Y$ ?
- (a)  $H_o : \beta_1 = 0$
  - (b)  $H_o : \beta_1 \neq 0$
85. What is the alternative hypothesis for testing whether a linear relationship exists between  $X$  and  $Y$ ?
- (a)  $H_a : \beta_1 = 0$
  - (b)  $H_a : \beta_1 \neq 0$
86. What is the decision based on the significance level?
- (a) Reject  $H_o$
  - (b) Fail to reject  $H_o$
87. What is the conclusion about whether a linear relationship exists between  $X$  and  $Y$ .
- (a) A statistically significant linear relationship exists
  - (b) A statistically significant leaner relationship does not exist

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88. What should you look for in an  $R^2$  to tell if a regression is a good fit?
89. If  $R^2 = 0.85$ , what proportion of the total variation is accounted for by the linear regression model?
- (a) 0.85%
  - (b) 0.15%
  - (c) 85%
  - (d) 15%
90. Given a data set of 57 with a regression relationship between  $Y$  and  $X_1$ ,  $X_2$ ,  $X_1X_2$ ,  $X_1^2$  and  $X_2^2$ . Find the following:
- (a) What is  $n$ ? \_\_\_\_\_
  - (b) What is  $p$ ? \_\_\_\_\_
  - (c) What is  $df_1$  or (regression degrees of freedom)? \_\_\_\_\_
  - (d) What is  $df_2$  or (residual degrees of freedom)? \_\_\_\_\_

**Given the F-table answer the following questions.**

$\alpha$	0.1	0.05	0.01	0.001
F cut off	2.012	2.479	3.548	5.0915

91. If the calculated F-value = 3.1, then the P-value will be \_\_\_\_\_
92. If the calculated F-value = 4.6, then the P-value will be \_\_\_\_\_
93. If the calculated F-value = 6.2, then the P-value will be \_\_\_\_\_
94. If the calculated F-value = 2, then the P-value will be \_\_\_\_\_
95. If the calculated F-value = 2.4 and  $\alpha = 0.05$  do we Reject or Fail to Reject the null? \_\_\_\_\_
96. If the calculated F-value = 3.2 and  $\alpha = 0.01$  do we Reject or Fail to Reject the null? \_\_\_\_\_
97. If the calculated F-value = 5.1 and  $\alpha = 0.001$  do we Reject or Fail to Reject the null? \_\_\_\_\_

**Evidence Evaluation:**  
After running statistical tests on given data sets, students learn how to evaluate the statistical tests based on the situation context.

98. A water bottling company uses a filling machine to fill plastic bottles with water. The bottles are supposed to contain 1 gallon of water. In fact, the contents vary according to a normal distribution with a mean of 0.99 gallons and a standard deviation of 0.056 gallons. What is the probability that the mean of a sample of 55 bottles is in the interval (1.01 , 0.98) gallons?

Evaluation and Production of Arguments: Students analyze statistical data sets and explain the question of statistical significance using several different statistical methods.

99. A random sampling of 40 ovens finds the sample mean cost to be \$567.23 with a sample standard deviation of \$156.45. Find a 95% confidence interval for the mean price of all ovens. What does the confidence interval mean in the context of this problem?

**Extra Credit: (Up to 10 points.)**

100. Give the next class some words of wisdom. What would you have done differently? How would you have organized yourself? What would you have paid more attention to? Is there anything I could have done differently as the instructor that would have made the class better? (I will give extra credit points based on the value of the advice given.)

# **Final - Take Home Fall 2018**

## **Answer questions 1 - 14**

Make sure to apply all the proper techniques learned throughout the course.  
You may use your notes and homework to complete this take home final.

Question 1: Create the indicated Auto Lists

<p>Create a list of numbers -56 through 23 that shows only odd numbers</p>	<p>Create a list of days of the week that starts at Friday and ends at Thursday</p>	<p>Create a list of dates that starts with July 24, 2013 and ends with Septemper 8,2013. Make sure the date format matches what is given in the question.</p>
--	---	---

## Question 2: Find the indicated values by creating formulas

List A	List B	List C	Add each element of List B to List C	Divide every element of List C by List A	Divide every element of List B by cell C9	Find the absolute values of every element in List B	Find the average of List B	Count the number of values in List A	Find the maximum and minimum values of List A, and label the values in the cell	Find the modes of List B, Make sure to use a formula
-5	26	-2								
14	13	9								
10	-10	-7								
-9	11	8								
24	13	2								
-15	-3	19								
12	-8	25								
-15	-3	3								
-12	5	-8								



**Question: Find the Mean, Median, and Mode of the given data. Make sure to label them.**

**Are there multiple Modes? If so list them.**

**Define your data range by giving it a name.**

**Which is more appropriate for this set of data, the median or mean?**

car prices	
\$	22,504
\$	24,276
\$	41,582
\$	22,188
\$	19,883
\$	45,387
\$	27,064
\$	54,064
\$	42,697
\$	45,664
\$	27,064
\$	41,537
\$	39,528
\$	16,192
\$	44,468

Mean

Median

Mode

## Find the indicated values in Blue under the table of data.

### Estimated Annual Sales of U.S. Retail and Food Services Firms by Kind of Business: 1992 Through 2015

[Estimates are shown in millions of dollars and are based on data from the Annual Retail Trade Survey. Estimates have been adjusted using final results of the 2012 Economic Census.]

Kind of business	Sporting goods, hobby, and musical instrument stores	Sporting goods stores	Hobby, toy, and game stores	Book, periodical, and music stores	Book stores and news dealers	Book stores
2015	73779	46353	18022	13576	12000	11009
2014 <sup>a</sup>	71423	44723	17409	14043	12364	11325
2013 <sup>a</sup>	70286	44401	16395	14292	12591	11489
2012 <sup>a</sup>	67743	42142	16620	15238	13416	12269
2011 <sup>a</sup>	63820	38995	16119	16877	14827	13716
2010 <sup>a</sup>	61901	37407	15805	18519	16326	15238
2009 <sup>a</sup>	60831	36574	15530	19382	16847	15802
2008 <sup>a</sup>	62463	36777	16107	21165	18098	16801
2007	62457	35804	16344	22194	18452	17171
2006	60229	33869	16020	22919	18305	16978
2005	56965	30713	16255	23924	18263	16992
2004	55000	28640	16314	24284	18167	16881
2003	53012	27000	16582	23755	17347	16219
2002	52652	26219	16909	24028	16560	15437
2001	52278	26158	16820	24558	16305	15098
2000	51444	25308	16947	24364	16148	14879
1999	48613	23699	16651	23845	15459	14172
1998	45810	22284	15833	22835	14631	12453
1997	43682	21167	15021	21606	14010	12742
1996	42913	20810	14502	20855	13158	11905
1995	40631	19869	13714	20011	12402	11196
1994	39423	18825	12850	18317	11213	10107
1993	35453	16791	11651	16638	10120	9108
1992	33663	15583	11251	15363	9303	8327
<b>Mean</b>						
<b>Median</b>						
<b>Variance</b>						
<b>Standard Deviation</b>						
<b>Min</b>						
<b>Max</b>						
<b>Range</b>						

**Questions**

1 Make the data a table.

Name the Data you want to use

1. Click header of the column you want
2. On the formula tab select *Define Name*
3. Change the *#Headers* to *#Data*

2 How Many Records are there?

3 Mean number of customers:

4 Get the Discriptive Statistics:

Evidence Evaluation: After running statistical tests on given data sets, students learn how to evaluate the statistical tests based on the situation context.

5 Add a column to the table that shows the z-scores for each date.

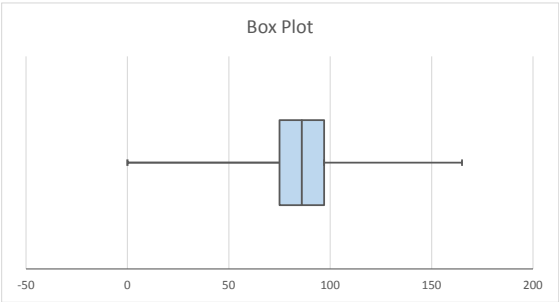
6 Use a filter to find the unusual data sets

7 Which Date(s) had unusual number of customers?

**Number of customers per day who visited a store**

Date	number of customers
May 15, 2010	96
May 16, 2010	103
May 17, 2010	105
May 18, 2010	36
May 19, 2010	67
May 20, 2010	101
May 21, 2010	94
May 22, 2010	88
May 23, 2010	106
May 24, 2010	158
May 25, 2010	163
May 26, 2010	15
May 27, 2010	101
May 28, 2010	98
May 29, 2010	36
May 30, 2010	106
May 31, 2010	98
June 1, 2010	50
June 2, 2010	69
June 3, 2010	89
June 4, 2010	33
June 5, 2010	17
June 6, 2010	169
June 7, 2010	51
June 8, 2010	81
June 9, 2010	41
June 10, 2010	178
June 11, 2010	15
June 12, 2010	84
June 13, 2010	14

Quartile Differences		
Min	-30	-30
First quartile	45	75
Median quartile	56	11
Third quartile	67	11
Max	135	68
skew	0.016	



Interquartile range (IQR)		
whisker upper bound	Mild outliers (1.5)	$Q3 + 1.5 * IQR$
whisker lower bound		$Q1 - 1.5 * IQR$
whisker upper bound	Extreme outliers (3)	$Q3 + 3 * IQR$
whisker lower bound		$Q1 - 3 * IQR$

1. Add the formulas for the whisker upper and lower bounds (Mild and Extreme)
2. Add conditional formatting to column C to highlight the outliers
3. In Column D write if the outlier is mild or extreme
4. In What range does the middle 50% of all data values lie?
5. Is the mean to the right or left of the median?

A store manager notices that of mens shoes sold 63% are running shoes.

1 What is the probability that out of 52 mens shoe purchases, 20 will be running shoes?

2 What is the probability that out of 52 mens shoe purchases, between 12 and 23 (including 12 and 23) will be running shoes?

3 What is the probability that out of 52 mens shoe purchases, at least 19 will be running shoes?

4 What is the probability that out of 52 mens shoe purchases, at most 16 will be running shoes?

Question	Scenario	Distribution Notation	Answer
	The mean number of semi-trucks that pull into a truck stop is 19 per hour.		
1	What is the probability that in the next hour 13 semis will pull in?		
2	What is the probability that in the next hour at least 9 semis will pull in?		
3	What is the probability that in the next hour between 20 and 24 (include 20 and 24) semis pull in?		

Scenario	Answer
What is the normal distribution for 15 if the mean is 0 and the standard deviation = 6.3	1
What is the normal distribution for less than 11 if the mean is 0 and the standard deviation = 2.4	2
What is the normal distribution for greater than 5 if the mean is 0 and the standard deviation = 14.5	3
What is the normal distribution for values greater than and not equal to 7 but less than and not equal to 9 if the mean is 0 and the standard deviation = 2.4	4
A test has a mean = 83 , standard deviation = 6.1	
The probability a randomly selected student scored higher than 94 .	5
The probability for a randomly selected student scored between 80 and 90	6
The probability of scoring 97 or higher.	7
The probability of a score between 60 and 70.	8

Question	Answer
How many different five-letter codes are there if only the letters A,B,C,D,E,F,G are used and <u>no</u> letters can be used more than once?	
How many different five-letter codes are there is only the letters A,B,C,D,E,F,G are used and letters <u>can</u> be used more than once?	
How many different four or five-letter codes are there is only the letters A,B,C,D,E,F,G are used and letters can be used more than once?	
If a committee is to be made of 10 people and there are 57 people to choose from, how many different committees are possible?	
A committee is to be made of 2 administrators, 7 faculty members and 12 students. If the number of possible administrators is 12, the number of possible faculty is 20, and the number of possible students is 150, how many different committees are possible?	
A jar contains 15 white marbles and 11 red marbles. 9 marbles are selected. In how many ways can 2 white marbles and 7 red marbles be selected?	
A jar contains 15 white marbles and 11 red marbles. 9 marbles are selected. In how many ways 9 red marbles be selected?	
A jar contains 15 white marbles and 10 red marbles. 8 marbles are selected. In how many ways can at least 6 red marbles be selected?	

## Strategies for Understanding and Evaluating Messages:



Find the t-statistic and the p-values for both a one-tailed and two-tailed test

1	56
2	44
3	71
4	50
5	68
6	69
7	81
8	64
9	69
10	45
11	51
12	73
13	44
14	56

t-statistic

P-Values

one-tailed

two-tailed

Given the data set find a relationship between y and x1, x2, x1^2, x2^2, and x1x2 with a significanve level of 0.05.

y	x1	x2
23.5	60.3	20.8
21	45.9	28.3
23	68.5	21.5
26.8	67.1	30
22.6	91.1	21.8
24.4	63.8	27.3
22.6	68.6	20.4
23.5	56.1	21.6
24.8	72.3	27.7
26.6	75.6	28.1
23.4	63.2	29.6
22.5	50.1	21.7
25.9	64.1	29.5
24.5	66.3	23.2
22.5	71.8	22
25.5	58	27.6
28.7	94.1	25.8
27.9	48.8	21.2

Answer

Evidence Evaluation: After running statistical tests on given data sets, students learn how to evaluate the statistical tests based on the situation context.

The data set contains different car models that each are fitted with two different tire brands.  
Suppose a researcher wants to determine if the brand of tire affects the mpg of cars. Use an  $\alpha$  of 0.01.  
Should a paired or unpaired t-test be used?  
Should a one or two tailed test be used?

Car model	Tire A		Tire B	
	mpg		mpg	
1	18.4		23.0	
2	31.6		38.7	
3	30		26.7	
4	28.6		24.7	
5	15.8		22.2	
6	17.5		27.6	
7	22.6		45.4	
8	21.8		43.8	
9	17.2		28.1	
10	21		35.6	

What is the Null Hypothesis?  
What is the Alt. Hypothesis?  
What is the P-value?  
The conclusion of the t-test is:  
Interpretation:

Reasoning/Conclusion: Students learn how to develop a conclusion about a situation context.

Use an ANOVA single factor to determine if the data given is all from the same group or not. Compare to 0.05

Group 1	Group 2	Group 3
22	20	29
20	11	19
24	19	14
21	14	17
28	13	20
16	19	11
18	13	15
23	11	15
30	12	17
30	15	20
12	12	10
26	14	19
18	18	10
14	20	10
19	14	10
28	11	14
20	16	18

$\mu_1$   
 $\mu_2$   
 $\mu_3$   
What is the Null Hypothesis?  
What is the Alt. Hypothesis?  
 $\alpha$   
What is the P-value?  
The conclusion of the ANOVA is:  
Interpretation:

Reasoning/Conclusion: Students learn how to develop a conclusion about a situation context.

## Conceptual Survey in Electricity and Magnetism (CSEM)

In any question referring to current, conventional current will be used (where conventional current is the flow of positive charges). In addition, all effects due to the earth's magnetic field will be so small that they will be ignored. Note that the term "particle" is meant to be an object without size or structure.

1. A hollow metal sphere is electrically neutral (no excess charge). A small amount of negative charge is suddenly placed at one point P on this metal sphere. If we check on this excess negative charge a few seconds later we will find one of the following possibilities:
  - (a) All of the excess charge remains right around P.
  - (b) The excess charge has distributed itself evenly over the outside surface of the sphere.
  - (c) The excess charge is evenly distributed over the inside and outside surface.
  - (d) Most of the charge is still at point P, but some will have spread over the sphere.
  - (e) There will be no excess charge left.
2. A hollow sphere made out of electrically insulating material is electrically neutral (no excess charge). A small amount of negative charge is suddenly placed at one point P on the outside of this sphere. If we check on this excess negative charge a few seconds later we will find one of the following possibilities:
  - (a) All of the excess charge remains right around P.
  - (b) The excess charge has distributed itself evenly over the outside surface of the sphere.
  - (c) The excess charge is evenly distributed over the inside and outside surface.
  - (d) Most of the charge is still at point P, but some will have spread over the sphere.
  - (e) There will be no excess charge left.

For questions 3 -5:

Two small objects each with a net charge of  $+Q$  exert a force of magnitude  $F$  on each other.



We replace one of the objects with another whose net charge is  $+4Q$ :



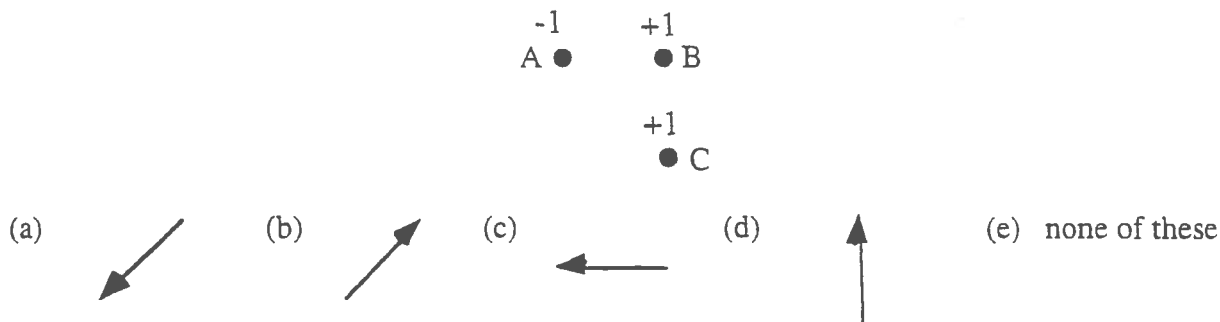
3. The original magnitude of the force on the  $+Q$  charge was  $F$ ; what is the magnitude of the force on the  $+Q$  now?
  - (a)  $16F$
  - (b)  $4F$
  - (c)  $F$
  - (d)  $F/4$
  - (e) other
4. What is the magnitude of the force on the  $+4Q$  charge?
  - (a)  $16F$
  - (b)  $4F$
  - (c)  $F$
  - (d)  $F/4$
  - (e) other

Next we move the  $+Q$  and  $+4Q$  charges to be 3 times as far apart as they were:

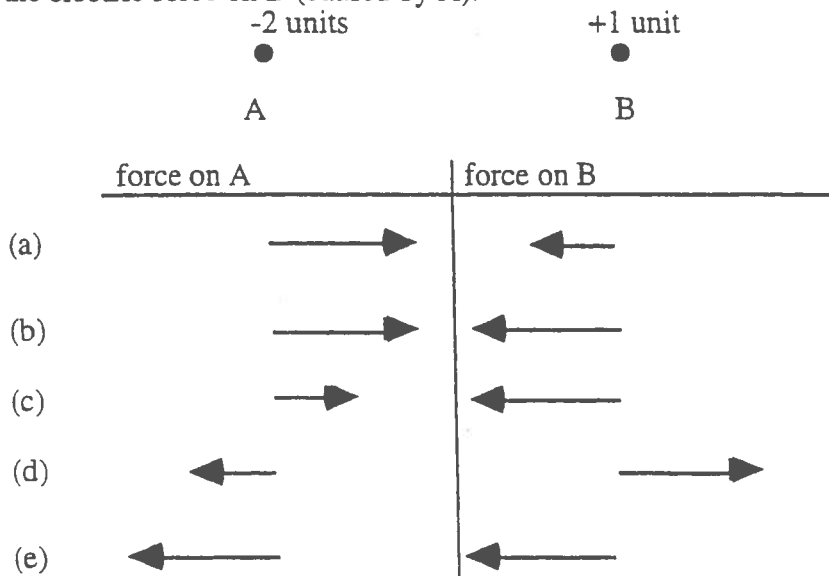


5. Now what is the magnitude of the force on the  $+4Q$ ?
  - (a)  $F/9$
  - (b)  $F/3$
  - (c)  $4F/9$
  - (d)  $4F/3$
  - (e) other

6. Which of the arrows is in the direction of the net force on charge B?



7. The picture below shows a particle (labeled B) which has a net electric charge of +1 unit. Several centimeters to the left is another particle (labeled A) which has a net charge of -2 units. Choose the pair of force vectors (the arrows) that correctly compare the electric force on A (caused by B) with the electric force on B (caused by A).



8. In the figure below, positive charges  $q_2$  and  $q_3$  exert on charge  $q_1$  a net electric force that points along the +x axis. If a positive charge  $Q$  is added at  $(b,0)$ , what now will happen to the force on  $q_1$ ? (All charges are fixed at their locations.)



- (a) No change in the size of the net force since  $Q$  is on the x-axis.
- (b) The size of the net force will change but not the direction.
- (c) The net force will decrease and the direction may change because of the interaction between  $Q$  and the positive charges  $q_2$  and  $q_3$ .
- (d) The net force will increase and the direction may change because of the interaction between  $Q$  and the positive charges  $q_2$  and  $q_3$ .
- (e) Cannot determine without knowing the magnitude of  $q_1$  and/or  $Q$ .

9. In the figure below, the electric field at point P is directed upward along the y-axis. If a negative charge  $-Q$  is added at a point on the positive y-axis, what happens to the field at P? (All of the charges are fixed in position.)

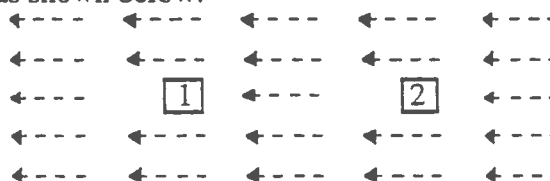


- (a) Nothing since  $-Q$  is on the y-axis.
- (b) Strength will increase because  $-Q$  is negative.
- (c) Strength will decrease and direction may change because of the interactions between  $-Q$  and the two negative  $q$ 's.
- (d) Strength will increase and direction may change because of the interactions between  $-Q$  and the two negative  $q$ 's.
- (e) Cannot determine without knowing the forces  $-Q$  exerts on the two negative  $q$ 's.

#### FOR QUESTIONS 10-11

A positive charge is placed at rest at the center of a region of space in which there is a uniform, three-dimensional electric field. (A uniform field is one whose strength and direction are the same at all points within the *region*.)

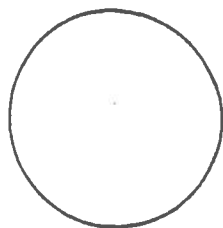
10. When the positive charge is released from rest in the uniform electric field, what will its subsequent motion be?
- (a) It will move at a constant speed.
  - (b) It will move at a constant velocity.
  - (c) It will move at a constant acceleration.
  - (d) It will move with a linearly changing acceleration.
  - (e) It will remain at rest in its initial position.
11. What happens to the electric potential energy of the positive charge, after the charge is released from rest in the uniform electric field?
- (a) It will remain constant because the electric field is uniform.
  - (b) It will remain constant because the charge remains at rest.
  - (c) It will increase because the charge will move in the direction of the electric field.
  - (d) It will decrease because the charge will move in the opposite direction of the electric field.
  - (e) It will decrease because the charge will move in the direction of the electric field.
12. A positive charge might be placed at one of two different locations in a region where there is a uniform electric field, as shown below.



How do the electric forces on the charge at positions 1 and 2 compare?

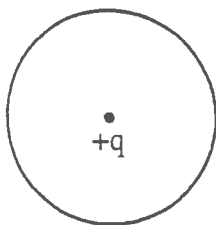
- (a) Force on the charge is greater at 1.
- (b) Force on the charge is greater at 2.
- (c) Force at both positions is zero.
- (d) Force at both positions is the same but not zero.
- (e) Force at both positions has the same magnitude but is in opposite directions.

13. The figure below shows a hollow conducting metal sphere which was given initially an evenly distributed positive (+) charge on its surface. Then a positive charge  $+Q$  was brought up near the sphere as shown. What is the direction of the electric field at the center of the sphere after the positive charge  $+Q$  is brought up near the sphere?



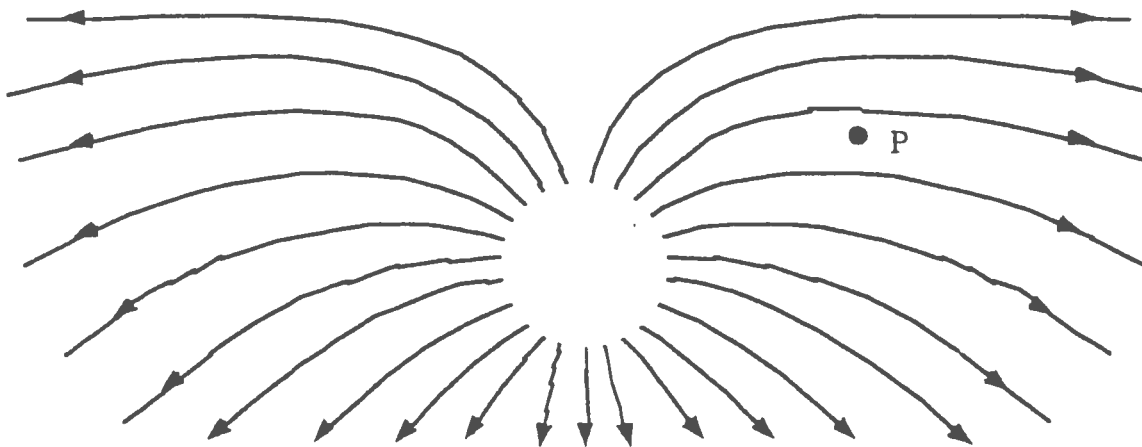
- (a) Left
- (b) Right
- (c) Up
- (d) Down
- (e) Zero field

14. The figure below shows an electric charge  $q$  located at the center of a hollow uncharged conducting metal sphere. Outside the sphere is a second charge  $Q$ . Both charges are positive. Choose the description below that describes the net electrical forces on each charge in this situation.



- (a) Both charges experience the same net force directed away from each other.
- (b) No net force is experienced by either charge.
- (c) There is no force on  $Q$  but a net force on  $q$ .
- (d) There is no force on  $q$  but a net force on  $Q$ .
- (e) Both charges experience a net force but they are different from each other.

USE THE FOLLOWING ELECTRIC FIELD DIAGRAM FOR QUESTION 15.



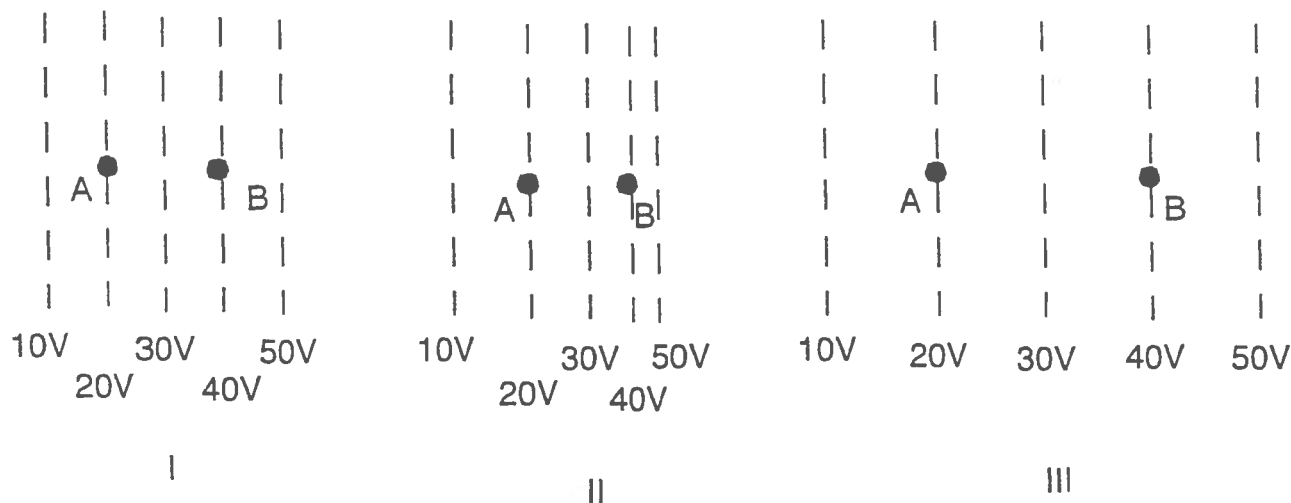
15. What is the direction of the electric force on a negative charge at point P in the diagram above?
- (a) ←
  - (b) ↙
  - (c) →
  - (d) ↗
  - (e) the force is zero



16. An electron is placed at a position on the x-axis where the electric potential is + 10 V. Which idea below best describes the future motion of the electron?
- The electron will move left (-x) since it is negatively charged.
  - The electron will move right (+x) since it is negatively charged.
  - The electron will move left (-x) since the potential is positive.
  - The electron will move right (+x) since the potential is positive.
  - The motion cannot be predicted with the information given.

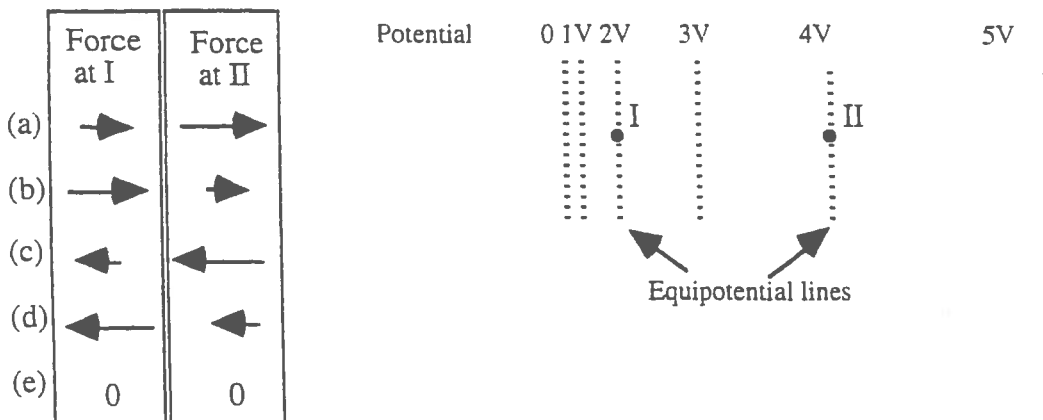
FOR QUESTIONS 17-19

In the figures below, the dotted lines show the equipotential lines of electric fields. (A charge moving along a line of equal potential would have a constant electric potential energy.) A charged object is moved directly from point A to point B. The charge on the object is +1  $\mu\text{C}$ .



17. How does the amount of work needed to move this charge compare for these three cases?
- Most work required in I.
  - Most work required in II.
  - Most work required in III.
  - I and II require the same amount of work but less than III.
  - All three would require the same amount of work.
18. How does the magnitude of the electric field at B compare for these three cases?
- $I > III > II$
  - $I > II > III$
  - $III > I > II$
  - $II > I > III$
  - $I = II = III$
19. For case III what is the direction of the electric force exerted by the field on the + 1  $\mu\text{C}$  charged object when at A and when at B?
- left at A and left at B
  - right at A and right at B
  - left at A and right at B
  - right at A and left at B
  - no electric force at either.

20. A positively-charged proton is first placed at rest at position I and then later at position II in a region whose electric potential (voltage) is described by the equipotential lines. Which set of arrows on the left below best describes the relative magnitudes and directions of the electric force exerted on the proton when at position I or II?

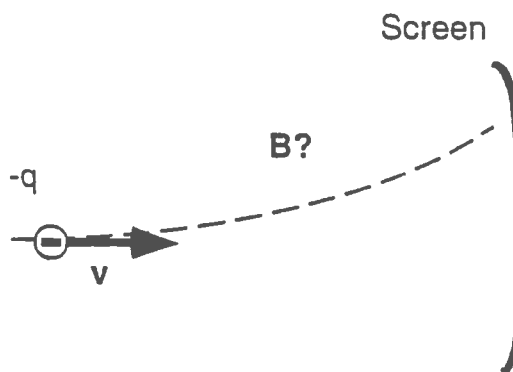


21. What happens to a positive charge that is placed at rest in a uniform magnetic field? (A uniform field is one whose strength and direction are the same at all points.)

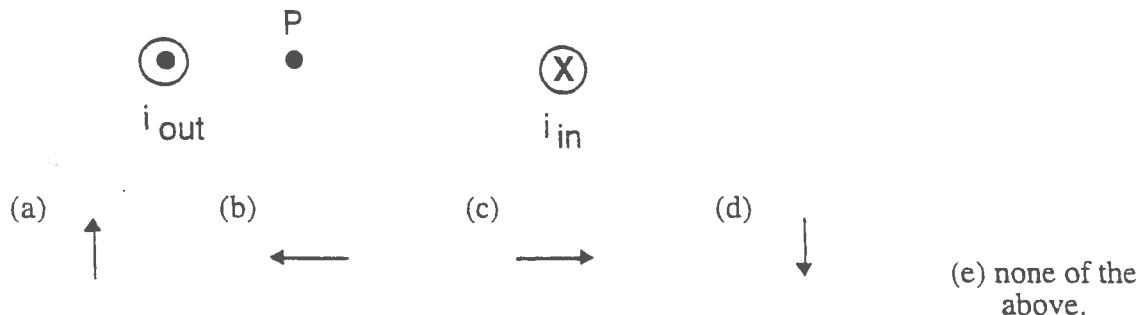
- It moves with a constant velocity since the force has a constant magnitude.
- It moves with a constant acceleration since the force has a constant magnitude.
- It moves in a circle at a constant speed since the force is always perpendicular to the velocity.
- It accelerates in a circle since the force is always perpendicular to the velocity.
- It remains at rest since the force and the initial velocity are zero.

22. An electron moves horizontally toward a screen. The electron moves along the path that is shown because of a magnetic force caused by a magnetic field. In what direction does that magnetic field point?

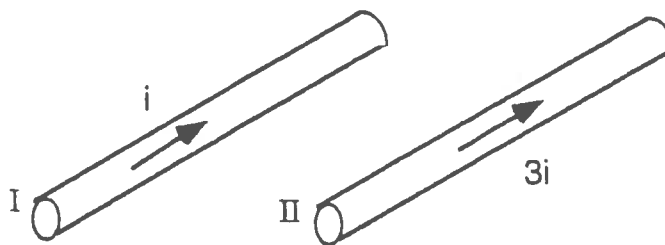
- Toward the top of the page
- Toward the bottom of the page
- Into the page
- Out of the page
- The magnetic field is in the direction of the curved path.



23. Wire 1 has a large current  $i$  flowing out of the page ( $\odot$ ), as shown in the diagram. Wire 2 has a large current  $i$  flowing into the page ( $\otimes$ ). In what direction does the magnetic field point at position P?



24. Two parallel wires I and II that are near each other carry currents  $i$  and  $3i$  both in the same direction. Compare the forces that the two wires exert on each other.



- (a) Wire I exerts a stronger force on wire II than II exerts on I.  
 (b) Wire II exerts a stronger force on wire I than I exerts on II.  
 (c) The wires exert equal magnitude attractive forces on each other.  
 (d) The wires exert equal magnitude repulsive forces on each other.  
 (e) The wires exert no forces on each other.
25. The figures below represent positively charged particles moving in the same uniform magnetic field. The field is directed from left to right. All of the particles have the same charge and the same speed  $v$ . Rank these situations according to the magnitudes of the force exerted by the field on the moving charge, from greatest to least.

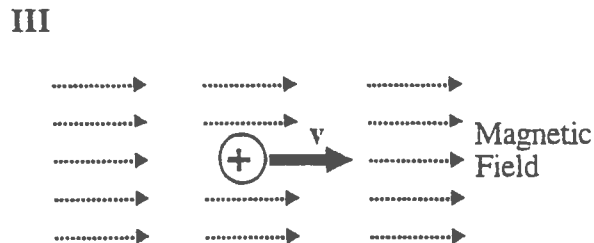
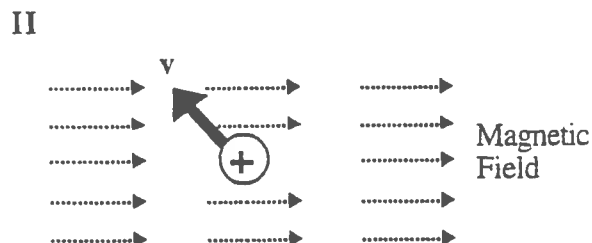
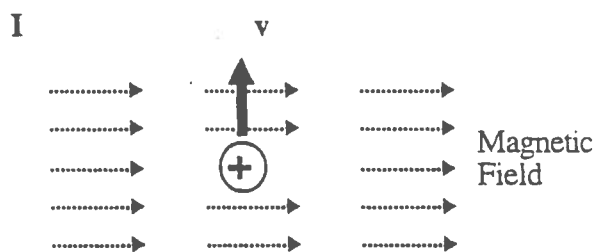
(a)  $I = II = III$

(b)  $III > I > II$

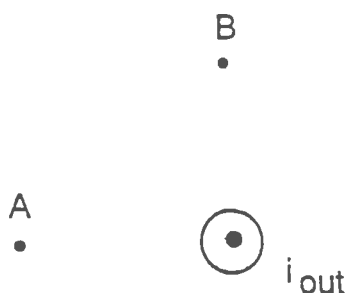
(c)  $II > I > III$

(d)  $I > II > III$

(e)  $III > II > I$

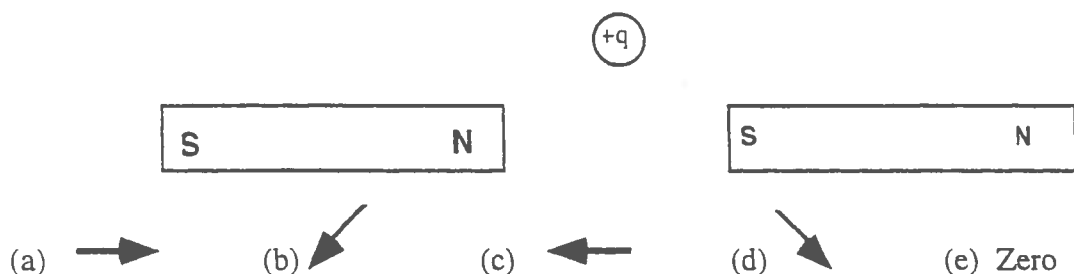


26. The diagram shows a wire with a large electric current  $i$  ( $\odot$ ) coming out of the paper. In what direction would the magnetic field be at positions A and B?

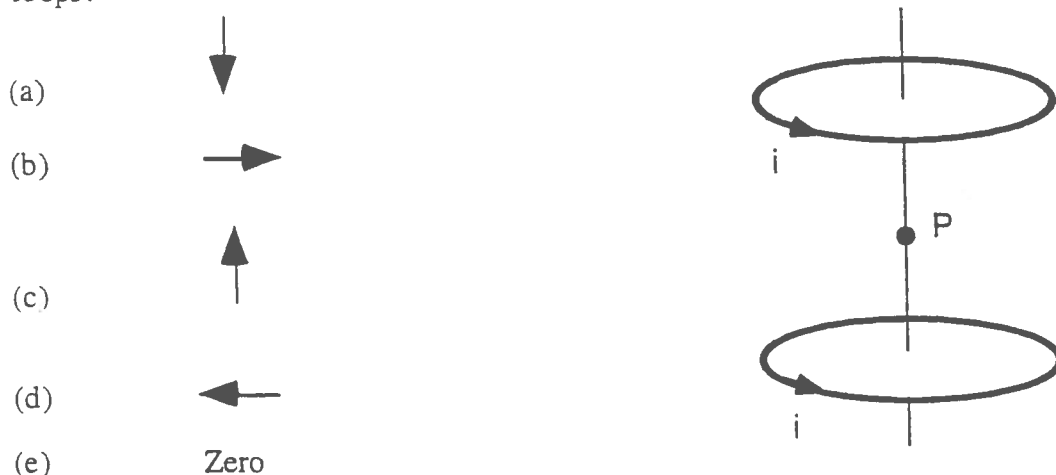


- (a)
- (b)
- (c)
- (d)
- (e) None of these

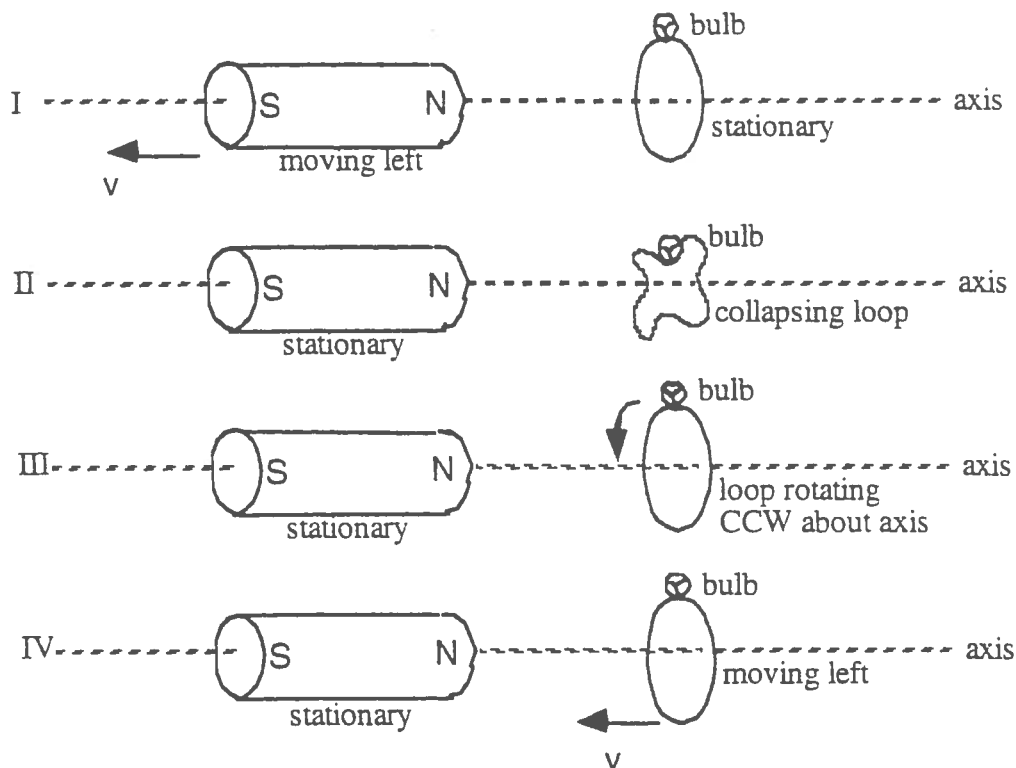
27. A positively-charged particle ( $+q$ ) is at rest in the plane between two fixed bar magnets, as shown. The magnet on the left is three times as strong as the magnet on the right. Which choice below best represents the resultant **MAGNETIC** force exerted by the magnets on the charge?



28. Two identical loops of wire carry identical currents  $i$ . The loops are located as shown in the diagram. Which arrow best represents the direction of the magnetic field at the point P midway between the loops?



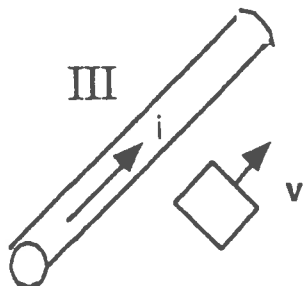
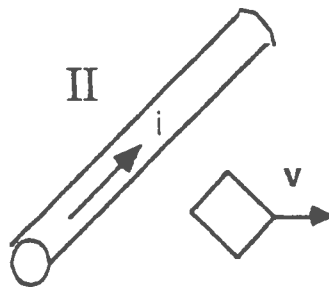
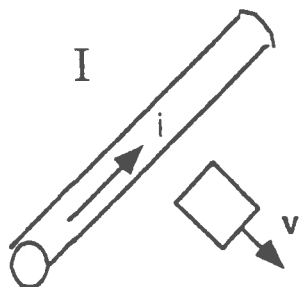
The five separate figures below involve a cylindrical magnet and a tiny light bulb connected to the ends of a loop of copper wire. These figures are to be used in the following question. The plane of the wire loop is perpendicular to the reference axis. The states of motion of the magnet and of the loop of wire are indicated in the diagram. Speed will be represented by  $v$  and CCW represents counter clockwise.



29. In which of the above figures will the light bulb be glowing?

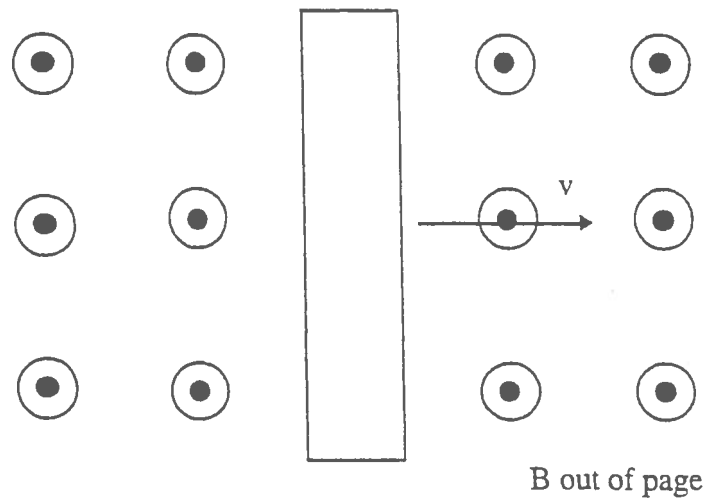
- (a) I, III, IV      (b) I, IV      (c) I, II, IV      (d) IV      (e) None of these

30. A very long straight wire carries a large steady current  $i$ . Rectangular metal loops, in the same plane as the wire, move with velocity  $v$  in the directions shown. Which loop will have an induced current?

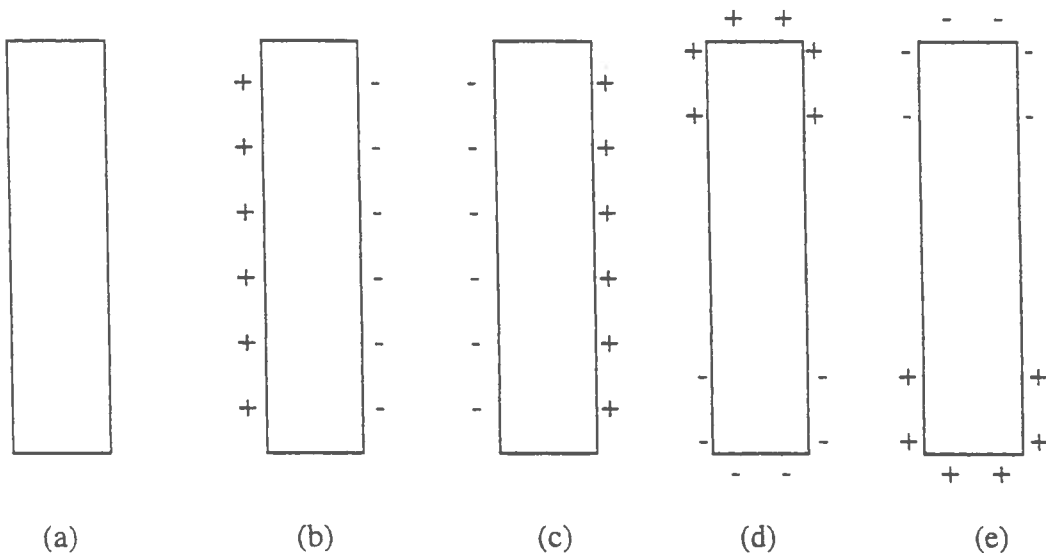


- (a) only I and II  
 (b) only I and III  
 (c) only II and III  
 (d) all of the above.  
 (e) none of the above.

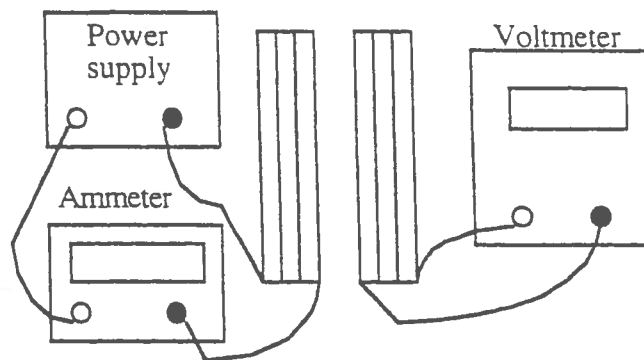
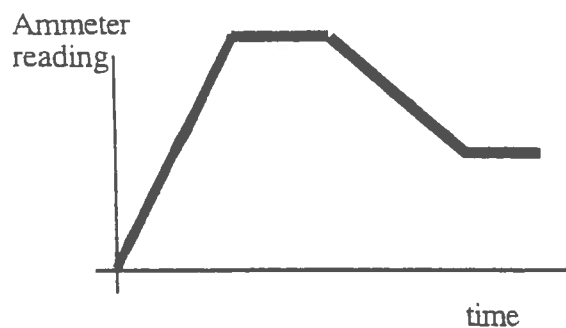
31. A neutral metal bar is moving at constant velocity  $v$  to the right through a region where there is a uniform magnetic field pointing out of the page. The magnetic field is produced by some large coils which are not shown on the diagram.



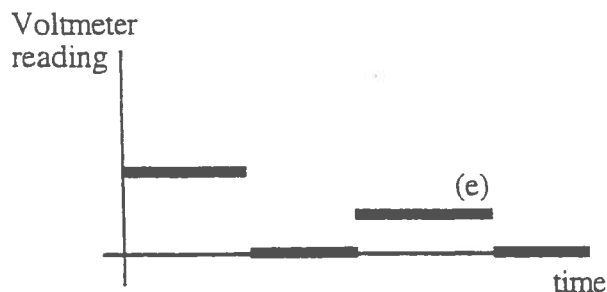
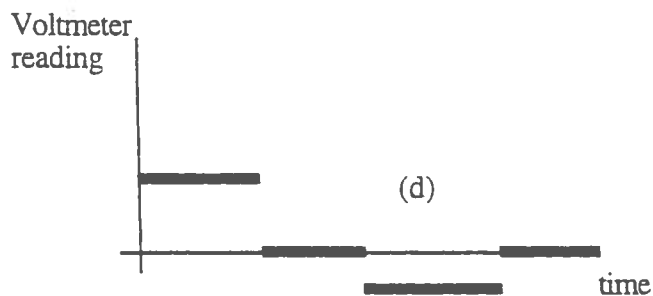
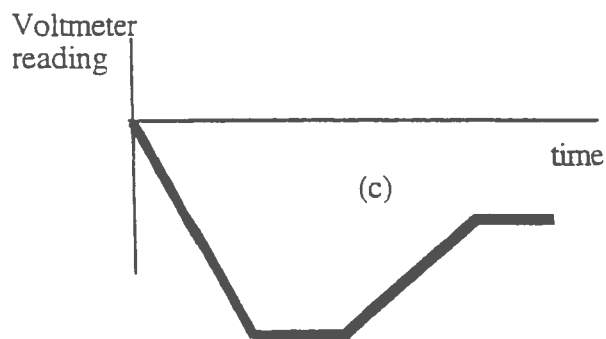
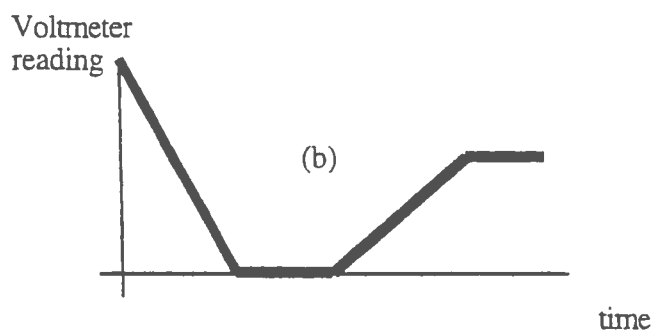
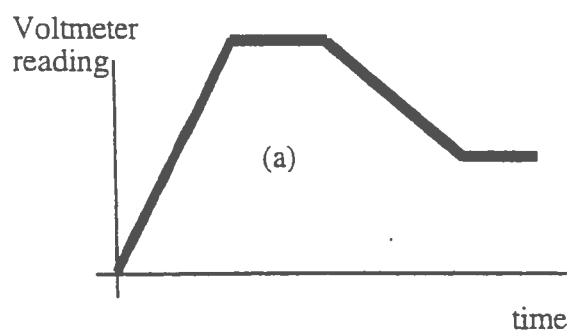
Which one of the following diagrams best describes the charge distribution on the surface of the metal bar?



32. A variable power supply is connected to a coil and an ammeter, and the time dependence of the ammeter reading is shown. A nearby coil is connected to a voltmeter.



Which of the following graphs correctly shows the time dependence of the voltmeter reading?



### SAMPLE ASSESSMENT: QUIZ

1. Calculate the calories in a particular food item that consists of 8 grams fat, 4 grams carbohydrates, and 3 grams protein.

8 grams fat = \_\_\_\_\_ calories

4 grams carbohydrates = \_\_\_\_\_ calories

3 grams protein = \_\_\_\_\_ calories

Now add up the total number of calories. What percent (based on calories) of this food item is carbohydrates?

percent calories from carbohydrates = \_\_\_\_\_ %

2. The table below indicates the number of calories expended while performing various activities for **1 hour**. These aren't the true values – they've been simplified for quick computation.

activity	100 lbs	120 lbs	140 lbs	160 lbs	180 lbs	200 lbs	220 lbs
sleeping	25	30	50	60	75	100	100
sitting taking notes / studying	50	80	100	120	140	150	160
driving a car	50	80	100	140	160	180	200
waiting tables	200	225	250	275	275	300	300
bicycling	300	400	500	600	700	800	1000

Using the table above, **calculate the total calories expended in one day** for a person weighing **100 pounds**, who spends the day doing the following:

2 hours driving a car \_\_\_\_\_

5 hours waiting tables \_\_\_\_\_

3 hours sitting in class, taking notes \_\_\_\_\_

5 hours studying \_\_\_\_\_

1 hour bicycling \_\_\_\_\_

8 hours sleeping \_\_\_\_\_

TOTAL CALORIES EXPENDED FOR THE DAY \_\_\_\_\_

3. Referring again to the table above, if a person who weighed 140lbs rode their bike for an hour a day, how many days would it take to lose one pound from bike riding alone? **For credit, you need to show your work.**

4. In last week's lab I talked about 3 different reasons why people obtain different amounts of calories from eating the exact same foods. Give me 2 of the 3 reasons and be specific for each of the two.

5. True False One gram of carbohydrate provides more input energy than one gram of fat.  
(circle answer)

6. True False One calorie of fat provides the same input energy as one calorie of carbohydrate.  
(circle answer)



**Clovis Community College**  
**Class Assessment 2019-2020**

**Class: History 1110 Survey of American History to 1865**

**Faculty:**

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
1. Students will analyze and critically interpret significant and primary texts and/or works of art.	All students took a comprehensive and objective final exam. Every multiple-choice question on the exam was linked to one or more of the course objectives that address the area state competencies. Questions on the final exam were based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. Ninety of the one hundred questions came from the three hourly exams taken during the semester. The final ten questions evaluated students' understanding of ideas and topics presented in the last class meeting.		
2. Students will compare art forms, modes of thought and expression, and processes across a range of historical periods and/or structures	All students took a comprehensive and objective final exam. Every multiple-choice question on the exam was linked to one or more of the course objectives that address the area state competencies. Questions on the final exam were based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. Ninety of the one hundred questions came from the three hourly exams taken during the semester.		

**Page 2 of 3 . . . . Course: History 1110 Survey of American History to 1865**

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
	The final ten questions evaluated students' understanding of ideas and topics presented in the last class meeting.		
3. Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives	All students took a comprehensive and objective final exam. Every multiple-choice question on the exam was linked to one or more of the course objectives that address the area state competencies. Questions on the final exam were based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. Ninety of the one hundred questions came from the three hourly exams taken during the semester. The final ten questions evaluated students' understanding of ideas and topics presented in the last class meeting.		

*All class assessment forms are due to your division chair by June 30 or as designated by the Division Chair.  
All assessments are due from the Division Chairs to the Assessment Committee Chair by July 30.*

**Page 3 of 3 . . . . Course: History 1110 Survey of American History to 1865**

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
4. Students will draw on historical and/or cultural perspectives to evaluate any or all of the following: contemporary problems/issues, contemporary modes of expression, and contemporary thought.	<p>All students took a comprehensive and objective final exam. Every multiple-choice question on the exam was linked to one or more of the course objectives that address the area state competencies. Questions on the final exam were based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films.</p> <p>Ninety of the one hundred questions came from the three hourly exams taken during the semester. The final ten questions evaluated students' understanding of ideas and topics presented in the last class meeting.</p>		

**Faculty Member Completing Assessment:**

**Reviewed by:**

(Division chair)

**Date:**

**Date:**

*All class assessment forms are due to your division chair by June 30 or as designated by the Division Chair.*

*All assessments are due from the Division Chairs to the Assessment Committee Chair by July 30.*

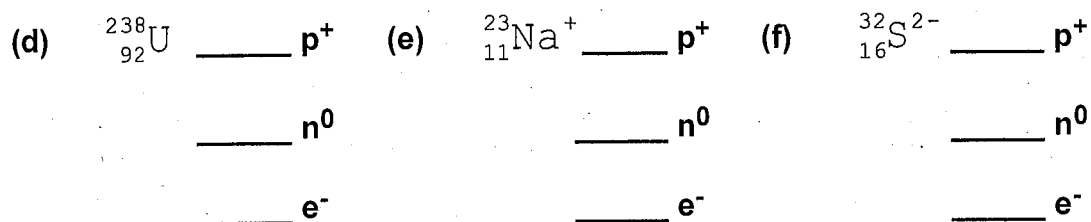
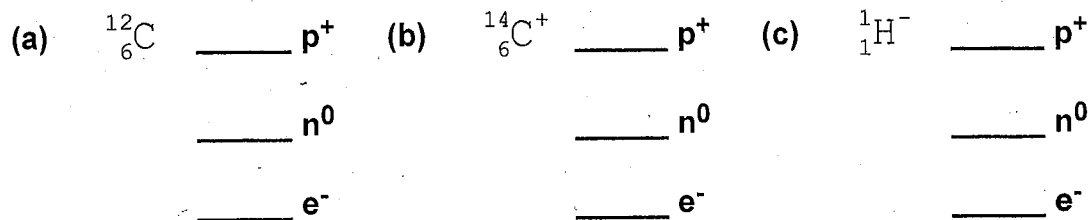
Chemistry 1120, Santa Fe Community College

Atomic Structure Homework

Name \_\_\_\_\_

1. Distinguish between the terms electron and Proton .
  
2. Write the complete symbol ( ${}^A_Z E^{chg}$ ) for an atom that contains 15 protons, 17 neutrons and 15 electrons. (*Write the correct atomic symbol in your answer, not E!!*)
  
3. Write the complete symbol ( ${}^A_Z E^{chg}$ ) for an atom that contains 1 proton, no neutrons and no electrons. (*Write the correct atomic symbol in your answer, not E!!*)
  
4. What is the value of the atomic number of each of the following elements:
  - a. tin
  - b. calcium
  - c. silver
  - d. Lead
  
5. For each of the following atoms specify the atomic number, the mass number:
  - a.  ${}^{32}\text{S}$
  - b.  ${}^{53}\text{Cr}$
  - c.  ${}^{24}\text{Mg}$
  - d.  ${}^3\text{H}$

6. How many protons, neutrons and electrons are there in each of the following species?



7. Write the complete symbol ( $^A_Z\text{E}^{\text{chg}}$ ) for an atom that contains 82 protons, 125 neutrons and 80 electrons. (Write the correct atomic symbol in your answer, not E!!)

8. Indicate whether each of the following pairs of atoms are isotopes, isobars, or neither:

a. (24p, 24e, 26n) and (24p, 24e, 28n)

b. (24p, 24e, 28n) and (25p, 25e, 27n)

c. (24p, 24e, 26n) and (25p, 25e, 26n)

d. (24p, 24e, 26n) and (24p, 24e, 24n)

## I. COURSE DESCRIPTION

- a) Course number/Name – **PHYS 2215**
- b) Prerequisite – Calculus I and II
- c) General Scope of Course – Newtonian mechanics, fluids, waves
- d) Instructor – Major Mia Yang, Rm 106 McClure. Work phone NMMI X8481 email: [yang@nmmi.edu](mailto:yang@nmmi.edu)
- e) Text – Physics for Science and Engineers with modern physics, Giancoli 4<sup>th</sup> edition
- f) The Lab Manual will be provided to you at the beginning of the semester.
- g) **Homework is assigned online through masteringphysics.com.** You need to purchase a masteringphysics pass code at the cadet store. You can buy the code with the textbook or separately. If you registered for Introduction to physics last semester, you can still use that code for this semester. The course ID will be given to you at the first day of class. **You need to register for the course by the end of the first week.**
- h) Requirements:
  - a) Scientific Calculator, pencil & notebook. **You are required to take notes.**
  - b) **NO LAPTOP OR CELLPHONE in the classroom.**
  - c) **Homework is assigned once a week online. Absolutely no late homework unless an acceptable reason.**
  - d) **The tests are accumulative tests. No test corrections. But bonus points will be assigned before the test. No test grades will be dropped at the end of the semester. But the final exam grade can replace one old test grade.**
  - e) Makeup lab, homework, quiz or test must be completed **in a week after the absence.**
  - f) **One quiz per chapter.** Quiz dates are not posted on the weekly schedule.
  - g) **No change in final exam schedule due to the air ticket, car pool or other reasons.**
  - h) **Every Monday and Wednesday night is the physics night at Wilson Hall. Dr. Tang and Dr. Yang will be there for the semester.**

## II. COURSE OBJECTIVES

**A. Substantive Objectives:** At the conclusion of this course, you will be able to

1. Demonstrate an understanding of the physical principles, such as Newtonian laws of mechanics, Newton's theory of gravitation, and fluid dynamics.
2. Know the symbol for the physical quantities covered, and know the physical quantity for which each symbol stands;
3. Demonstrate an improved insight into the mechanical phenomena of the physical world, and have the knowledge of the technical terms used in the discussion of the phenomena studied.
4. Recognize the role that mechanics plays in many facts of our life and the responsibility of those who understand physics to contribute appropriately to their communities;
5. Using the scientific method to conduct an experiment with modern laboratory equipment.

**B. Skill Objectives:** Upon completion of this course you will be able to

1. Apply principles of Newtonian mechanics to predict or calculate the translational motion of particles in one or higher dimensions using calculus.
2. Apply the principles of Newtonian mechanics to predict or calculate the rotational motions of particles using calculus.
3. Apply Newton's gravitational theory to circular motions and understand planetary motions or subatomic particle motions.

4. Apply work and energy principle to understand the energy transfer and solve the problem with kinetic energy and potential energy.
5. Apply Archimedes' and Bernoulli's principle to understand fluid dynamics based on Newtonian mechanics.
6. Apply a systematic approach to problem-solving by
  - a) Identify knowns and unknowns and set up strategies to solve the problem.
  - b) Using calculus to set up equations to solve unknowns involving derivative and integration.
  - c) Derive algebraic solutions using appropriate symbols for physical terms.
7. Solve problems involving reading or constructing a graph.
8. Applying mathematics of vectors to principles of physics.
9. Use Vernier Logger Pro units, LabQuests, computers, and/or the internet to gather, compile, and present information gathered experimentally;
10. Use other laboratory equipment to experimentally verify mechanics concepts.
11. Complete the laboratory report that presents experimental data in a data table and includes an analysis of the experimental results. Complete the pre and post-lab questions.

### III. TESTING AND ASSEMENT

- a) Homework will count for 10% of your course average.
- b) Labs will count 15% of your course average.
- c) Quiz will count 10% of your course average.
- d) Tests will count 40% of your course average.
- e) The final exam will be comprehensive in nature and counts as 20% of your final average.
- f) Class Participation and Behavior. This category will count 5 % towards your final average.
- g) Grades. Grades will be assigned according to the scale below:

89.0 – 100%	A	79.0 – 88.9%	B	69.0 – 78.9%	C	60.0 – 68.9%	D	<60.0%	F
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### IV. LATE POLICY

I do **NOT** accept late homework, lab reports, or extra credit except in the case of excused class absence on the day the assignment is due. **If you know that you will miss a test due to an athletic trip or for some other reason, then before the scheduled test date you must arrange with me a time to take the test. Failure to make prior arrangement will result in a 0 on the test.** If a test or quiz is missed due to an excused absence, it will be made up the day you return to class. In case of an extended period of absence, you and I will confer on the makeup schedule.

### V. HONOR POLICY

**Cheating, assisting in cheating, or employing other types of academic dishonesty to any degree and in any form automatically results in a grade of ZERO on the entire assignment or test for all parties involved. Further, a grade of F in that class for the semester may be given and the incident will be referred to the Commandant**

## August, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13 Syllabus, Chapter 2, Sec 1-3, reference frame, average and instantaneous velocity	14  No Lab Scheduled	15 Chapter 2, Secs 4- 5: acceleration, constant acceleration motion	16 Chapter 2, Secs 6: solving kinematics problems	17 Chapter 2, Secs 7: Free Fall Motion	18
19	20 Chapter 2, Secs 8- 9: integral calculus, graph Analysis	21  Lab 1: EXPERIMENTAL ERROR AND DATA ANALYSIS	22 Review Chapter 2	23 Chapter 3, Sec 1- 3: Vectors, scalars, addition and subtraction of vectors	24 Chapter 3, Sec 1- 3: Vectors, scalars, addition and subtraction of vectors	25
26	27 Chapter 3, Secs 4-6: Adding vectors by components, unit vector, vector kinematics	28  Test Chapter 2	29 Chapter 3, Secs 7-8: Projectile motion	30 Chapter 3, Secs 9: Relative Velocity	31 Review Chapter 3	



## September, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 No Class	4 Lab2: SHOOTING THROUGH HOOPS	5 Chapter 4, Secs 1-5: Force, Newton 1-3 laws	6 Chapter 3 test	7 Chapter 4, Secs 6, Weight; Chapter 5, Secs 1: Friction, Chapter 6, Secs 7: Types of Forces	8
9	10 Problems	11 Lab3: DISCOVERING HOOKE'S LAW	12 Chapter 4, Secs 7-8	13 Review Chapter 4	14 Review Chapter 4 (short class)	15
16	17 Chapter 5, Secs 2-3: Uniform Circular Motion	18 Chapter 4 test	19 Chapter 5, Secs 4-6: Highway Curves, drag and terminal velocity	20 Chapter 6, Secs 1-3: Newton's Law of Universal Gravity and its vector form	21 Chapter 6, Secs 4-6, 8*: Satellites, Kepler's Law	22
23	24 Review Chapter 5-6	25 Test 2-6	26 Chapter 7, Secs 1-3: Work done by constant and varying forces	27 Chapter 7, Secs 4: Kinetic Energy and work energy principle	28 Chapter 8, Secs 2: Potential energy	29

# October, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	1 No Class	2 Lab 4: CENTRIPETAL FORCE	3 Chapter 8, Secs 1, 3: Conservative and nonconservative force, Mechanical Energy	4 Chapter 8, Secs 4-6: Energy Conservation	5 Chapter 8, Secs 7-9: Escape Velocity and Power	6
7	8 Review Chapter 7-8	9 Chapter 2-8 test	10 Chapter 9, Secs 1-3: Momentum, conservation of momentum, Collision	11 Chapter 9, Secs 4-5: Two types of collision and its energy	12 Chapter 9, Secs 6: Inelastic Collision	13
14	15 Chapter 9, Secs 7: Collisions in higher dimensions	16 Lab 5: CONSERVATION OF ENERGY	17 Chapter 9, Secs 8: Center of Mass	18 Chapter 9, Secs 9-10: Translational Motion, systems of variable mass	19 Review Chapter 9	20
21	22 Review Chapter 9	23 Chapter 2-9 test	24 Chapter 10, Secs 1 –3: Angular Quantities and its vector Nature, constant angular acceleration motion	25 Chapter 10, Secs 4-6 : Torque, Rotational dynamics	26 Chapter 11. Sec 2: Vector Product, Torque as a vector	27
28	29 Chapter 10, Secs 7: Moments of inertia	30 Lab 6: THE BALLISTIC PENDULUM	31 Chapter 10, Secs 8-10: Rotational Kinetic Energy, Rolling			3

# November, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 Review Chapter 10	2 Chapter 11, Secs 1- 3: Angular Momentum	3
4	5 Chapter 11, Secs 4-6: Torque for a system of particles, for rigid body, conservation of angular momentum	6 Lab 7: CONSERVATION OF ANGULAR MOMENTUM	7 Chapter 11, Secs 7-9: Tops, Gyroscope, Rotating Frames, The Coriolis Effect	8 Review Chapter 10, 11	9 Review Chapter 10, 11	10
11	12 no class	13 Chapter 2-11 test	14 Chapter 13, Secs 1-4: Phase of matter, Density, Pressure	15 Chapter 13, Secs 5-7: Atm, Gauge Pressure, Pascal's Principle, Buoyancy and Archimedes' Principle	16 quiz	17
18	19 Thanks Giving Break	20 Thanks Giving Break	21 Thanks Giving Break	22 Thanks Giving Break	23 Thanks Giving Break	24
25	26 Chapter 13, Secs 8- 10: Fluids in Motion, Bernoulli's Principle	27 lab8: COMPOUND LEVER	28 Chapter 13, Secs 11- 12: Viscosity, Flow in Tubes	29 Chapter 13, Secs 13- 14: Surface Tension, pumps and Heart	30 Review on Chapter 13	

# December, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 Test Chapter 2-13	4 Lab 9: ARCHIMEDES PRINCIPLE	5 Review or Project Demonstration	6 Academic Retreat	7 Final Exams	8
9	10 Final Exams	11 Final Exams	12 Final Exams	13 Final Exams	14 Winter Break	15
16	17 Winter Break	18 Winter Break	19 Winter Break	20 Winter Break	21 Winter Break	22
23	24 Winter Break	25 Winter Break	26 Winter Break	27 Winter Break	28 Winter Break	29

**ESSAY. Write your answer in the space provided or on a separate sheet of paper.**

- 1) An object has a velocity  $\vec{v}_0(t=0.0 \text{ s}) = (1.00 \text{ m/s})\hat{i} + (-1.00 \text{ m/s})\hat{j}$  at time  $t = 0.00 \text{ s}$ . The acceleration of the object is  $\vec{a}(t) = (-6.00 \text{ m/s}^3)t\hat{i} + (12.0 \text{ m/s}^4)t^2\hat{j}$ . If the object is located at  $\vec{r}_0(t) = (1.00 \text{ m})\hat{i} + (-1.00 \text{ m})\hat{j}$  at time  $t = 0.00 \text{ s}$ ,
- What is the velocity as a function of time?
  - What is the velocity at time  $t = 0.00 \text{ s}$ ?
  - what is the position of the object as a function of time?
  - what is the position of the object at time  $t = 1.00 \text{ s}$ ?

- 2) Two boxes are connected by a cord running over a pulley as shown in Fig. 4–5. Box I of mass 8.0 kg rest on the top of the table; the coefficient of kinetic friction between box I and the table is 0.10. Box II has a mass of 15.0 kg.
- (a) Draw the free-body diagrams for the two boxes, identifying all of the forces acting on each of the masses.
- (b) Calculate the tension in the cord.

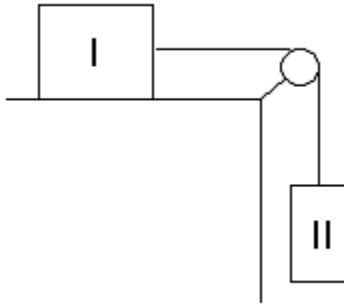


FIGURE 4–5

- 3) A block with mass  $1.0\text{ kg}$  is positioned at the base of a  $30^\circ$  inclined plane that is frictionless. A bullet with mass  $0.05\text{ kg}$  that is traveling at  $200\text{ m/s}$  along the incline is shot at the block and is embedded in the block after the collision.
- (A). What is the velocity of the bullet and block after the collision?
- (B). How far along the plane will the bullet and block travel?



- 4) A force at  $\vec{F} = 1.00 \text{ N } \hat{i} - 1.00 \text{ N } \hat{j} + 1.00 \text{ N } \hat{k}$  is applied to an particle with mass  $m=1.00 \text{ kg}$  at position  $\vec{r} = 1.00 \text{ m } \hat{i} + 1.00 \text{ m } \hat{j} + 1.00 \text{ m } \hat{k}$ .
- a) What is the torque about the origin?
- b) if the velocity of the particle at that moment when the force is acting on the particle is  $\vec{v} = 2.00 \text{ m/s } \hat{i} + 3.00 \text{ m/s } \hat{j} - 1.00 \text{ m/s } \hat{k}$ , what is the angular momentum of the particle about the origin?



- 5) Water flows through a horizontal pipe of cross-sectional area  $10.0 \text{ cm}^2$  at a pressure of  $0.250 \text{ atm}$ . The flow rate is  $1.00 \times 10^{-3} \text{ m}^3/\text{s}$ . At a valve, the effective cross-sectional area of the pipe is reduced to  $5.00 \text{ cm}^2$ . What is the pressure at the valve?

- 6) Suppose a person with mass  $M$  stands at the edge of a merry-go-round with radius  $R$  turntable that is mounted on frictionless bearings and has a moment of inertia of  $I$ . The turntable is at rest initially, but when the person begins running at a linear speed of  $v$  (with respect to the turntable) around its edge, the turntable begins to rotate in the opposite direction. Calculate the angular velocity of the turntable. express your answer in terms of  $M$ ,  $I$ ,  $v$  and  $R$

- 7) The conservative force on an object with mass  $m=1.00$  kg moving in one dimension is given by  $F(x) = (2.00 \text{ N/m})x + (1.00 \text{ N/m}^3)x^3$ . Assuming there is only one force acting on the object.
- (a) What is the change in potential energy when the object moves from  $x = 1.00$  m to  $x = 2.00$  m?
  - (b) If the velocity of the block is  $3.00$  m/s when  $x=1.00$  m, what is the velocity of the object when it moves to  $x=2.00$  m.

- 8) A long thin rod of length  $L$  has a linear density  $\lambda(x) = Ax$  where  $x$  is the distance from the left end of the rod.
- (a) How far is the center of mass of the rod from the left end of the rod?
  - (b) Determine the moment of inertia of the rod about an axis perpendicular to the rod that passes through the left end of the rod

- 9) A solid uniform sphere is rolling without slipping along a horizontal surface with a speed of 6.0 m/s when it starts up a ramp that makes an angle of  $30^\circ$  with the horizontal.  
Can it roll 6.0 m up along the surface of the ramp?

- 10) A piece of copper was hanged by a spring scale when it was partially submerged in the water with  $\frac{1}{3}$  of the copper above the waterline. The density of copper is  $\rho$  and the volume of the copper is  $V$ . What is the reading on the scale?. use the density of water as  $\rho_w$

# 7 CONSERVATION OF ANGULAR MOMENTUM

## 7.1 INTRODUCTION

In your study of linear momentum, you learned that, in the absence of an unbalanced external force, the momentum of a system remains constant. In this experiment, you will examine how the *angular* momentum of a rotating system responds to changes in the moment of inertia,  $I$ .

## 7.2 OBJECTIVES

- Collect angle vs. time and angular velocity vs. time data for rotating systems.
- Analyze the  $\theta$ - $t$  and  $\omega$ - $t$  graphs both before and after changes in the moment of inertia.
- Determine the effect of changes in the moment of inertia on the angular momentum of the system.

## 7.3 MATERIALS

	Manufacturer's Serial #	Student ID
Vernier data-collection interface ring stand or vertical support rod		
Logger Pro or LabQuest App balance		
Vernier Rotary Motion Sensor metric ruler		
Vernier Rotary Motion Accessory Kit		

## 7.4 PROCEDURE

1. Mount the Rotary Motion Sensor to the vertical support rod. Place the 3-step Pulley on the rotating shaft of the sensor so that the largest pulley is on top. Measure the mass and diameter of the aluminum disk with the smaller hole. Mount this disk to the pulley using the longer machine screw sleeve (see Figure 7.1).
2. Connect the sensor to the data-collection interface and begin the data-collection program. The default data-collections settings are appropriate for this experiment.
3. Spin the aluminum disk so that it is rotating reasonably rapidly, then begin data collection. Note that the angular velocity gradually decreases during the interval in which you collected data. Consider why this occurs. Store this run (Run 1).
4. Obtain the second aluminum disk from the accessory kit; determine its mass and diameter. Position this disk (cork pads down) over the sleeve of the screw holding the first disk to the pulley. Practice dropping the second disk onto the first so as to minimize any torque you might apply to the system (see Figure 7.2).
5. Begin the first disk rotating rapidly as before and begin collecting data. After a few seconds, drop the second disk onto the rotating disk and observe the change in both the  $\omega$ -t and  $\alpha$ -t graphs. Store this run





Figure 7.1: Experimental Setup 1



Figure 7.2: Experimental Setup 2

(Run 2).

6. Repeat Step 5, but begin with a lower angular velocity than before. Store this run (Run 3).
7. Find the mass of the steel disk. Measure the diameter of both the central hole and the entire disk. Replace the first aluminum disk with the steel disk and hub and tighten the screw as before (see Figure 7.3).



Figure 7.3: Experimental Setup 3

8. Try to spin the steel disk about as rapidly as you did the aluminum disk in Step 3 and then begin collecting data. Store this run (Run 4).
9. Repeat Step 5, dropping the aluminum disk onto the steel disk after a few seconds. Store this run (Run 5) and save the experiment file in case you need to return to it.
10. Use a text or web resource to find an expression for the moment of inertia for a disk; determine the values of  $I$  for your aluminum disks. With its large central hole, the steel disk should be treated as a cylindrical tube. Using the appropriate expression, determine the value of  $I$  for the steel disk. Record in the Data Analysis.

11. Examine the  $\omega$ - $t$  graph for your runs with the single aluminum disk (Run1) and the steel disk (Run 4). Determine the rate of change of the angular velocity,  $\omega$ , for each disk as it slowed. Account for this change in terms of any unbalanced forces that may be acting on the system. Explain the difference in the rates of change of  $\omega$  (aluminum vs. steel) in terms of the values you calculated in Step 10.
12. Examine the  $\omega$ - $t$  graph for Run 2. Determine the rate of change of  $\omega$  before you dropped the second disk onto the first. Record the angular velocity just before and just after you increased the mass of the system. Determine the time interval ( $\Delta t$ ) between these two velocity readings.
  - (a) In Logger Pro, drag-select the interval between these two readings. The  $\Delta x$  in the lower left corner gives the value of  $\Delta t$ .
  - (b) In LabQuest App, drag and select the interval between these two readings and use the Delta function under Statistics to perform this task.
13. The angular momentum,  $L$ , of a system undergoing rotation is the product of its moment of inertia,  $I$ , and the angular velocity,  $\omega$ .

$$L = I\omega \quad (7.1)$$

Determine the angular momentum of the system before and after you dropped the second aluminum disk onto the first. Calculate the percent difference between these values.

14. Use the initial rate of change in  $\omega$  and the time interval between your two readings to determine  $\Delta\omega$  due to friction alone. What portion of the difference in the angular momentum before and after you increased the mass can be accounted for by frictional losses?
15. Repeat the calculations in Steps 12 to 14 for your third and fifth runs.

## 7.5 DATA SHEET AND ANALYSIS

1. Use a text or web resource to find an expression for the moment of inertia for a disk; Determine the values of  $I$  for your aluminum disks.
2. With its large central hole, the steel disk should be treated as a cylindrical tube. Using the appropriate expression, determine the value of  $I$  for the steel disk.
3. Examine the  $\omega$ - $t$  graph for your runs with the single aluminum disk (Run1) and the steel disk (Run 4). Determine the rate of change of the angular velocity,  $\omega$ , for each disk as it slowed (get the slope of the  $\omega$ - $t$  graph) . Account for this change in terms of any unbalanced forces that may be acting on the system. Explain the difference in the rates of change of  $\omega$  (aluminum vs. steel) in terms of the values you calculated above.

the rate of change of the angular velocity for the aluminum disk	
the rate of change of the angular velocity for the steel disk	

4. Data Analysis for Run 2
  - (a) examine the  $\omega$ - $t$  graph for Run 2. Determine the rate of change of  $\omega$  before you dropped the second disk onto the first (slope of the  $\omega$ - $t$  graph before collision). Record the angular velocity just before and just after you increased the mass of the system. Determine the time interval ( $\Delta t$ ) between these two velocity readings.

Angular velocity just before you increase the mass of the system	
Angular velocity just after you increase the mass of the system	
time interval ( $\Delta t$ ) between these two velocity readings	
the rate of change of $\omega$ before you dropped the second disk onto the first	

- (b) calculate the angular momentum of the system before and after you dropped the second aluminum disk on the first using Equation 7.1 and previous data table. Calculate the percentage difference.

Angular momentum of the system before you dropped the second aluminum disk on the first	
Angular momentum of the system after you dropped the second aluminum disk on the first	
percentage difference	

- (c) Use the initial rate of change in  $\omega$  and the time interval between your two readings to determine  $\Delta\omega$  due to friction alone.

- (d) What portion of the difference in the angular momentum before and after you increased the mass can be accounted for by frictional losses?

#### 5. Data Analysis for Run 3

- (a) examine the  $\omega$ - $t$  graph for Run 2. Determine the rate of change of  $\omega$  before you dropped the second disk onto the first ( the slope of  $\omega$ - $t$  graph before collision). Record the angular velocity just before and just after you increased the mass of the system. Determine the time interval ( $\Delta t$ ) between these two velocity readings.

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*CONSERVATION OF ANGULAR MOMENTUM*

Angular velocity just before you increase the mass of the system	
Angular velocity just after you increase the mass of the system	
time interval ( $\Delta t$ ) between these two velocity readings	
the rate of change of $\omega$ before you dropped the second disk onto the first	

- (b) calculate the angular momentum of the system before and after you dropped the second aluminum disk on the first using Equation 7.1 and previous data table. Calculate the percentage difference.

Angular momentum of the system before you dropped the second aluminum disk on the first	
Angular momentum of the system after you dropped the second aluminum disk on the first	
percentage difference	

- (c) Use the initial rate of change in  $\omega$  and the time interval between your two readings to determine  $\Delta\omega$  due to friction alone.

- (d) What portion of the difference in the angular momentum before and after you increased the mass can be accounted for by frictional losses?

6. Data Analysis for Run 5

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*CONSERVATION OF ANGULAR MOMENTUM*

- (a) examine the  $\omega$ - $t$  graph for Run 2. Determine the rate of change of  $\omega$  before you dropped the second disk onto the first (slope of the  $\omega$ - $t$  graph before collision). Record the angular velocity just before and just after you increased the mass of the system. Determine the time interval ( $\Delta t$ ) between these two velocity readings.

Angular velocity just before you increase the mass of the system	
Angular velocity just after you increase the mass of the system	
time interval ( $\Delta t$ ) between these two velocity readings	
the rate of change of $\omega$ before you dropped the second disk onto the first	

- (b) calculate the angular momentum of the system before and after you dropped the second aluminum disk on the first using Equation 7.1 and previous data table. Calculate the percentage difference.

Angular momentum of the system before you dropped the second aluminum disk on the first	
Angular momentum of the system after you dropped the second aluminum disk on the first	
percentage difference	

- (c) Use the initial rate of change in  $\omega$  and the time interval between your two readings to determine  $\Delta\omega$  due to friction alone.

- (d) What portion of the difference in the angular momentum before and after you increased the mass can be accounted for by frictional losses?

## 7.6 DISCUSSION AND CONCLUSION

Analyze the results of your measurements in relation both to the purpose(s) stated in the introduction and your understanding.

## 7.7 POST-LABORATORY QUESTIONS

1. A uniform 2.00-kg circular disk of radius 20.0 cm is rotating clockwise about an axis through its center with an angular speed 30.0 revolutions per second. A second uniform 1.50-kg circular disk of radius 15.0 cm that is not rotating is dropped onto the first disk so that the axis of rotation of the first disk passes through the center of the second disk. What is the final angular speed of the two disks when they are rotating together?



## 7.8 PRE-LABORATORY ASSIGNMENT

1. Use a text or web resource to find an expression for the moment of inertia for a disk;
2. With its large central hole, the steel disk should be treated as a cylindrical tube. Use a text or web resource to find an expression for the moment of inertia for a cylindrical tube.
3. use the following two figures to answer the questions: assuming the angular momentum of the original disk is  $L = (0.0107 \text{ kg} \cdot \text{m}^2)$  and the value for the two-disk system is  $L = 0.0214 \text{ kg} \cdot \text{m}^2$

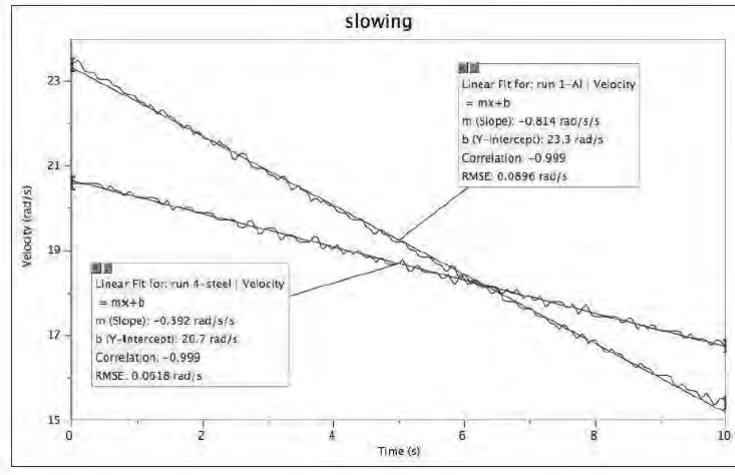


Figure 7.4: Data Analysis 1

4. Examine the  $\omega$ - $t$  graph for your runs with the single aluminum disk (Run1) and the steel disk (Run 4). Determine the rate of change of the angular velocity,  $\omega$ , for each disk as it slowed (get the slope of the  $\omega$ - $t$  graph) . Account for this change in terms of any unbalanced forces that may be acting on the

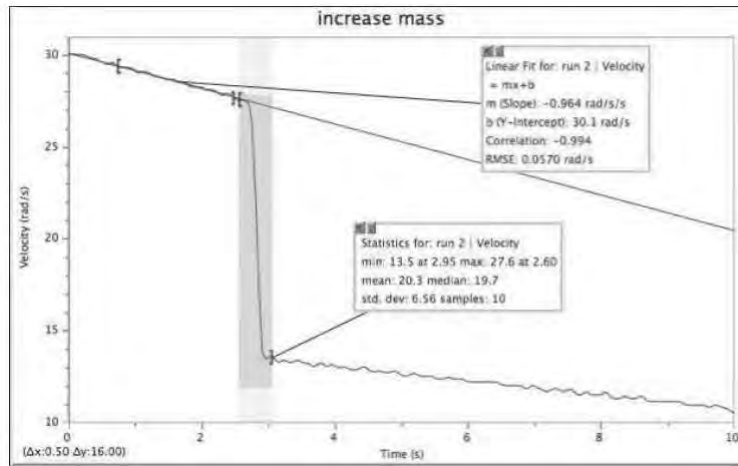


Figure 7.5: Data Analysis 2

system. Explain the difference in the rates of change of  $\omega$  (aluminum vs. steel) in terms of the values you calculated above.

the rate of change of the angular velocity for the aluminum disk	
the rate of change of the angular velocity for the steel disk	

#### 5. Data Analysis for Run 2

- (a) examine the  $\omega$ - $t$  graph for Run 2. Determine the rate of change of  $\omega$  before you dropped the second disk onto the first (slope of the  $\omega$ - $t$  graph before collision). Record the angular velocity just before and just after you increased the mass of the system. Determine the time interval ( $\Delta t$ ) between these two velocity readings.

Angular velocity just before you increase the mass of the system	
Angular velocity just after you increase the mass of the system	
time interval ( $\Delta t$ ) between these two velocity readings	
the rate of change of $\omega$ before you dropped the second disk onto the first	

---

*CONSERVATION OF ANGULAR MOMENTUM*

- (b) calculate the angular momentum of the system before and after you dropped the second aluminum disk on the first using Equation 7.1 and previous data table. Calculate the percentage difference.

Angular momentum of the system before you dropped the second aluminum disk on the first	
Angular momentum of the system after you dropped the second aluminum disk on the first	
percentage difference	

- (c) Use the initial rate of change in  $\omega$  and the time interval between your two readings to determine  $\Delta\omega$  due to friction alone.

- (d) What portion of the difference in the angular momentum before and after you increased the mass can be accounted for by frictional losses?

Name: \_\_\_\_\_

## Concert Report #2 (50 points) "Classical" Concert

Instructions: Attend a Classical concert, get a Program of the concert and attach it to this form. Professional concerts get 20 points of extra credit.

Include this form, the concert program and the ticket.

Sign your name on the concert Program

**Important: Keller Hall event programs must be stamped twice. (There will be someone at the desk who will stamp your program before the concert begins and again after the concert has ended.)**

**Chatter concert programs must be signed by an official at the front desk. Please include a photo of the inside of the venue as well, not to be taken during the performance.)**

NOTE: DO NOT take this form to the concert – have the experience then fill it out at home

### CONCERT SETTING (8 points)

1. Date of Concert:

Place of concert:

2. Name of ensemble(s) or group performing:

3. Describe the concert environment (performance hall, performer's attire, audience size and attire, and where you were seated):

4a. Were program notes provided? Yes No 4b. Were there any spoken remarks about the concert? Yes No

Change in program? Yes No

Any comments regarding the composer, the performers or the compositions performed?

### CONCERT MUSIC (2 points):

5. Which genres of music were performed?

Sonata (Chamber Music) Symphony Concerto Opera excerpt

Chorus

6. Were any of the works programmatic (*music with literary or pictorial associations*)? Yes No

If yes, which compositions were programmatic?

7. Choose two complete works from the program and fill in the blanks (12 pts)

Composition #1

Name of Composer:

Composition Title:

Movements/ Tempo markings, if through-written, just leave blank:

I.

III.

II.

IV.

Historical Era of Work: \_\_\_\_\_

choose from: Medieval - pre-1450, Renaissance – 1450-1600, Baroque - 1600-1750, Classical 1750 – 1820, Romantic 1820 – 1900, 20th Century 1901 – 2000, 21st Century 2001 - present –

Describe the overall mood of the music:

Name the instruments that were used and make sure to list any featured (solo) instruments or vocalists:

Composition #2:

Name of Composer:

Composition Title:

Movements/ Tempo markings, if through-written, just leave blank:

I.

III.

II.

IV.

Historical Era of Work: \_\_\_\_\_

choose from: Medieval - pre-1450, Renaissance – 1450-1600, Baroque - 1600-1750, Classical 1750 – 1820, Romantic 1820 – 1900, 20th Century 1901 – 2000, 21st Century 2001 - present -

Describe the overall mood of the music:

Name the instruments that were used and make sure to list any featured (solo) instruments or vocalists:

8. Choose one movement of a piece to describe in detail. USE AT LEAST TWO MUSICAL TERMS (8 points) in the correct context.

Choose among these items to discuss: Describe melody, mode, meter, tempo, rhythm, dynamics, texture, harmony. Was there a voice or instrument timbre that affected you emotionally?

Pro Tip: Look up a recording of the piece to help you in your description and refresh your memory of what you heard.

Write your description here:

9. Write a brief narrative (10 points) about this concert experience. Was there anything about the concert that surprised you? Include your overall reaction to the concert and compare this experience to that of the first concert.

10. (10 points) Choose one of the pieces that was performed on the concert. Find a YouTube video of a performance of a *different* composition by the same composer, and answer the following questions. (If you can't find a youtube recording by the same composer, pick a composer from the same country and era).

Name of composer selected:

YouTube composition by the composer chosen:

- 1) Is the YouTube performance in a similar or different style from the live performance you heard by the same composer? What is similar or different about the musical style?
- 2) Compare the execution of each composition. Did one performance feature more highly skilled performers? If so, which performance featured more highly skilled performers?
- 3) What are the benefits of attending a live concert, and what are the benefits of listening to recordings of performances? Compare each listening experience.
- 4) Do you enjoy music by this composer? Describe what you like or dislike about this composer using examples from both selections.
- 5) Which selection do you like better? Describe what you like about it.

1.

2.

(continued)

3.

4.

5.

# OCEAN WATER TEMPERATURE, SALINITY, AND DENSITY

## Objectives

Temperature and salinity are two of the most important properties of ocean water. Together, (along with pressure to a much lesser extent) they control the density, or mass per unit volume, of ocean water. Salinity is essentially a measure of the amount of salt dissolved in ocean water. On average, ocean water is 96.5% water and 3.5% dissolved salts. This average salinity, 3.5% or 35 parts per thousand, has a salinity value of 35.

[Actual measurement of dissolved salt in ocean water has been a major challenge to chemical oceanographers. Salinity is now measured as a ratio relating the electrical conductivity of the ocean water being sampled to that of a standardized potassium chloride (KCl) solution. All water samples with the same conductivity ratio have the same salinity. Although dimensionless by definition, salinity values are sometimes reported in practical salinity units (psu). For example, average ocean salinity is reported as 35 or, possibly, 35 psu. The electrical conductivity definition of salinity, based on the practical salinity scale (pss) as approved by the international Joint Panel on Oceanographic Tables and Standards in 1978, is employed in the salinity determinations.]

After completing this investigation, you should be able to:

- Explain how ocean density depends on ocean water temperature and salinity.
- Identify the various processes that govern the salinity of surface ocean waters.
- Describe the general patterns of sea-surface temperature and salinity.

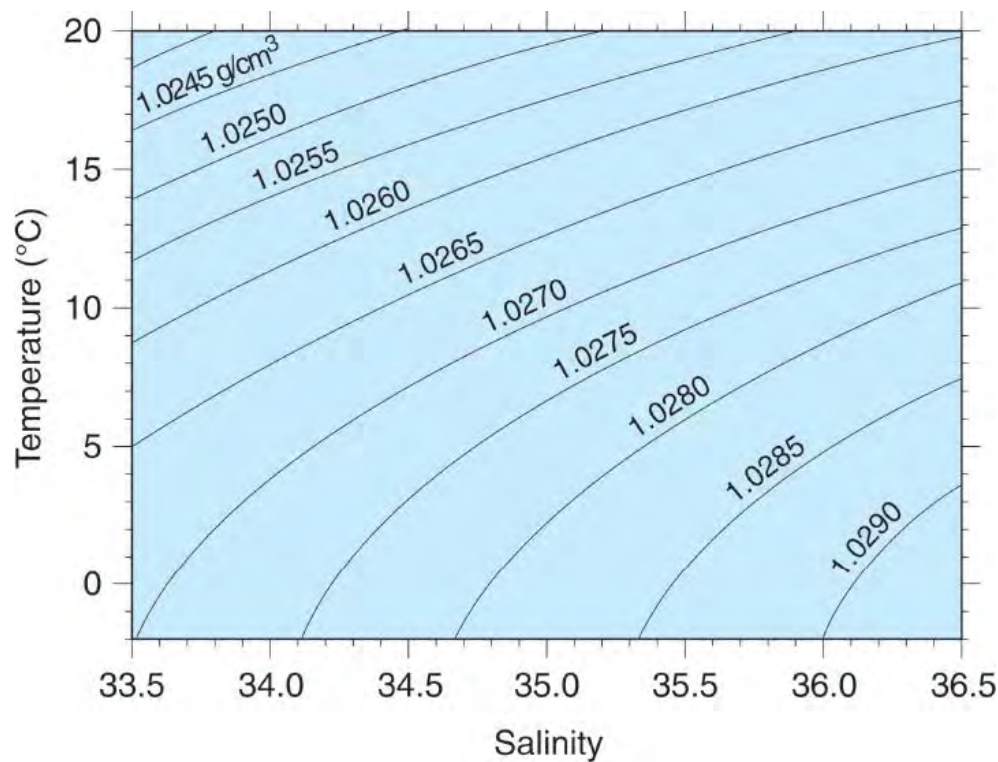
## Temperature, Salinity, and Density

Changes in ocean water density are largely due to processes that take place at the interface between the ocean and atmosphere. Solar radiation and ocean/atmosphere heat exchange affect sea-surface temperature (SST), which impacts density. The rate of evaporation is associated with change in temperature, which results in salinity change and impacts on density. Precipitation, sea ice formation, and freshwater runoff from land also influence salinity and the density of surface waters.



**Figure 1** is a *Temperature-Salinity (T-S) Diagram* with temperature plotted in degrees Celsius on the left vertical axis and the salinity increasing from left to right along the bottom horizontal axis. The solid curves are lines of constant ocean water density in grams per cubic centimeter ( $\text{g/cm}^3$ ). Lines of constant density are called **isopycnals**. Variations in ocean water density are small, but very significant, so values are determined to the fourth decimal place.

1. Examine Figure 1. Employing a ruler or other straight edge to assure greater accuracy in your measurements, place a large dot on the T-S diagram representing ocean water with a temperature of  $+1.0^\circ\text{C}$  and salinity of 33.7. Label it “A.” According to the diagram, ocean water at A has a density near \_\_\_\_\_  $\text{g/cm}^3$ .



**Figure 1.** Temperature-Salinity (T-S) Diagram with density contours in  $\text{g/cm}^3$ .

2. Imagine that ocean water at A is heated to  $6^\circ\text{C}$  with no change in salinity. Its density is now \_\_\_\_\_  $\text{g/cm}^3$ .
3. This experiment shows that at constant salinity, raising the temperature of ocean water causes its density to \_\_\_\_\_.

4. Suppose the ocean water returns to its original position at **A**. The move shows that with falling temperature and constant salinity, the density of ocean water \_\_\_\_\_.
5. From its original **A** position on the T-S Diagram, now imagine the ocean water salinity increasing to 34.9 while the temperature remains constant. Its new density would be near \_\_\_\_\_ g/cm<sup>3</sup>.
6. This illustrates that at constant temperature, an increase in the salinity of ocean water causes its density to \_\_\_\_\_.
7. Returning the ocean water to its original position shows that with decreasing salinity and constant temperature, the density of ocean water \_\_\_\_\_.
8. Through the use of isopycnals displayed in Figure 1, the density of a sample of ocean water at **A** was determined. Any other ocean water sample positioned on the same isopycnal as the **A** ocean water would have the same density. For example, water with the same density at a temperature of 11°C would have a salinity of about \_\_\_\_\_. Hence, this demonstrates that ocean water samples with different combinations of salinity and temperature can have the same density.

Suppose that two ocean water samples having the same density but different temperatures and salinities are mixed in equal portions. Does the resulting ocean water mixture have the same density? To find out, plot a point on the T-S Diagram representing a temperature of 13°C and a salinity of 35.9, and label it **B**. Both water samples at **A** and **B** have a density of 1.0270 g/cm<sup>3</sup>. Now draw a straight line connecting points **A** and **B**. If equal portions of the two samples are mixed, the resulting mixture would have temperature/salinity/density properties corresponding to a point half way along the straight line connecting points **A** and **B**. Mark that new point **C**.

9. The temperature and salinity of the ocean water at point **C** would be the average of the original sample values. However, it can be seen on the T-S diagram that the density of the mixed *Sample C* is \_\_\_\_\_ the original density of ocean water *Samples A* and *B*.
10. **Caballing** is the name given to the mixing of water masses to produce a blend that is denser than either original water mass. Because of the change in density, the newly mixed water \_\_\_\_\_ through the surrounding water column. Caballing is thought to contribute to vertical circulation in some higher latitude Northern Hemisphere ocean locations.

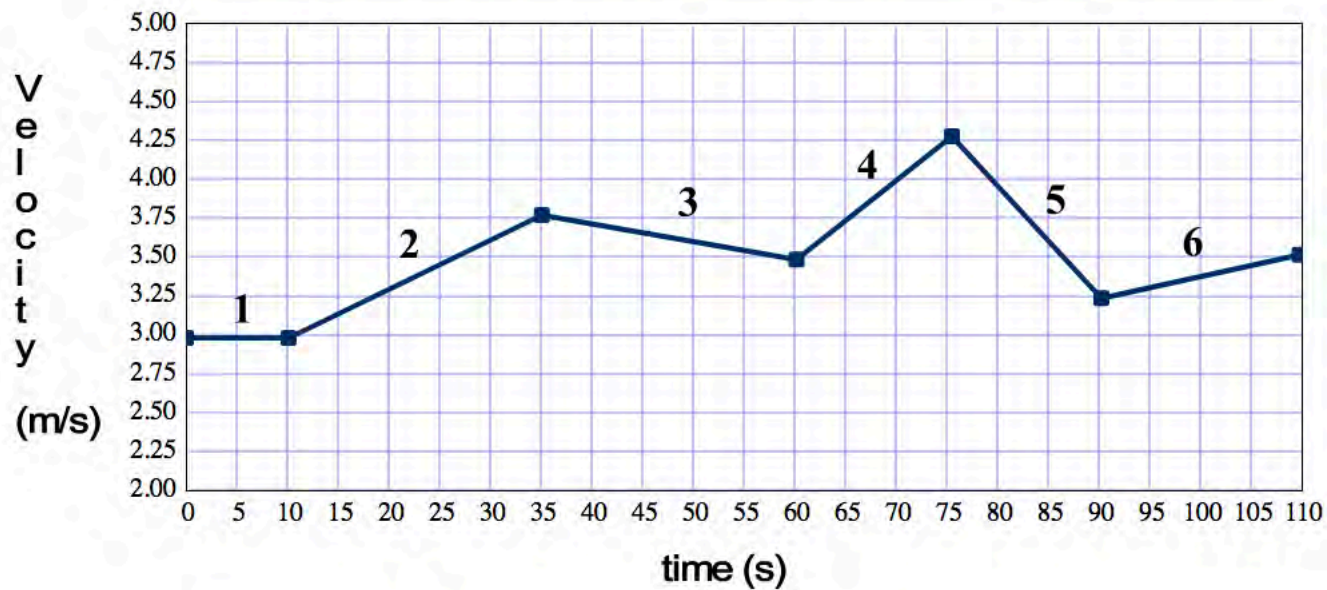
11. When water evaporates, dissolved and suspended materials are left behind. Temperature largely governs the rate of evaporation because warmer, active water molecules more readily escape the water surface and enter the atmosphere as water vapor. In regions of the ocean where the weather is persistently fair with little precipitation and temperatures are consistently high, evaporation rates are relatively high and consequently the salinity of surface waters is relatively \_\_\_\_\_.
12. At constant temperature, the surface water salinity is likely to be lower where the climate is \_\_\_\_\_, that is, where precipitation is greater than evaporation.
13. Flood waters discharged into coastal waters by a large river are likely to \_\_\_\_\_ the salinity of surface coastal water.
14. At high latitudes in winter, the freezing ocean water excludes salts which are trapped in brine cells between ice crystals or drained and incorporated into the underlying ocean water. The combination of the low temperatures and increased salinity results in the underlying ocean water having a relatively \_\_\_\_\_ density.

## **Summary**

Temperature and salinity are the most important properties that control the density of ocean water. Changes in the density of ocean water are primarily due to processes that take place at the ocean surface as mass and energy are exchanged across the air-sea interface. They also play major roles in producing the global patterns of sea-surface temperature and salinity, along with variations with depth in the ocean.

SAMPLE ASSESSMENT:

A runner is training for a race. In order to track the pace of the run, the runner is able to record time splits for the entire period. This allows the runner to produce the following velocity versus time graph, broken into six segments.



- a) What is the acceleration during segment 2?
- b) What distance does the runner cover in the first minute?

Essential Quantitative reasoning	Unacceptable	Acceptable	Target
Representation of quantitative information	Student incorrectly interprets the graph.	Student interprets the graph correctly but appears to extract incorrect numbers.	Student correctly interprets and extracts numbers from graph.

## **Laboratory Writeup**

### **Flame Photometry**

#### **Objective**

A series of known ionic compounds will be placed sequentially into a flame. The color of the flame will be altered by the presence of the ionic compound. The major goal of this experiment is to decide whether it is the cation or the anion that determines the color of the flame. This result will then be used to identify one of the ions in a series of unknown ionic compounds.

#### **Samples**

A total of fourteen samples of known ionic compounds numbered 1-14 are provided in microcentrifuge tubes. An additional six samples of unknown ionic compounds numbered U1-U6 are also provided in microcentrifuge tubes.

#### **Initial Setup Procedure**

Place approximately twenty cotton swabs in a clean 150 ml beaker.

Transfer approximately 4 mls of hydrochloric acid solution into a second 150 ml beaker.

Using an angle clamp, attach a Bunsen burner to a ringstand. Adjust the burner such that it forms a 45° angle with the horizontal with the flame pointing in the downward direction. Use a striker to spark a flame in the burner and adjust the flame so that an inner cone is observed in the flame.

Place a 400 ml beaker under the Bunsen burner to catch any falling hot debris during the experiment.

#### **Flame Test Procedure**

Obtain one of the known ionic compounds contained in the microcentrifuge tubes. Record the formula unit and color of the compound.

Obtain a cotton swab and gently dip it into a sample of hydrochloric acid. The cotton need not be soaked with the acid solution. Dip the cotton swab into the sample compound—the hydrochloric acid solution will help the solid chemical sample adhere to the cotton and also helps to enhance the flame color.

Place the cotton swab into the extreme edge of the flame. Be certain that the flame is burning only the chemical at the end of the cotton swab and not the cotton itself. Observe and record the color of the flame. The flame color should be recorded as accurately as possible. For example, do not simply record a flame as green—use adjectives such as lime green, Kelly green, forest green, yellow-green, etc.

Dispose of the used cotton swab in the 400 ml waste beaker beneath the Bunsen burner.

Repeat this procedure for each of the fourteen known ionic compounds.

Chemistry  
Flame Photometry  
Laboratory Data Sheet

Name:  
Date:  
Lab Partner:

Sample Number	Name	Formula	Flame color	Compound color Solid/solution	Transition or Representative metal cation?
1	Cobalt (II) Nitrate				
2	Sodium Sulfate				
3	Strontium Chloride				
4	Calcium Nitrate				
5	Potassium Bromide				
6	Lithium Nitrate				
7	Copper (II) Sulfate				
8		CaCO <sub>3</sub>			
9		SrNO <sub>3</sub>			
10		Li <sub>2</sub> CO <sub>3</sub>			
11		CoCl <sub>2</sub>			
12		NaBr			
13		K <sub>2</sub> SO <sub>4</sub>			
14		CuCO <sub>3</sub>			
Unknowns					
U1					
U2					
U3					
U4					
U5					
U6					

## Critical Response Paper: Tom Regan's "The Case for Animal Rights"

Due:

Length: Roughly 3 pages (length may vary)

At this point in the semester, we've developed a number of skills which should now all be utilized in writing this paper. Here are the most relevant:

- Identification of an author's main conclusion
- Accurate reconstruction of the author's argument for that conclusion
- Objective evaluation of the author's argument in terms of (as the case may be) validity, soundness, strength, cogency, etc.
- Awareness and avoidance of one's own preexisting cognitive biases

In this short paper, you have a very focused goal, namely: to identify Tom Regan's main moral claim that he's trying to substantiate; to identify and clarify his core argument for that claim; and to give your evaluation and argument for whether his argument is successful. We'll be discussing his paper and these guidelines in our meeting on\_\_\_\_\_.

### *The Guidelines*

Each of the following tasks should be executed in your paper.

1. Have an introductory paragraph in which you introduce:
  - a. the broader topic under consideration
  - b. the main author and title you'll be discussing
  - c. your eventual thesis/conclusion. For this paper, your thesis will be either that Regan's argument for animal rights succeeds or that it fails.
2. To broaden the theoretical discussion, before addressing Regan's main argument you should first address the following points:
  - a. Regan considers and rejects several ethical theories about ethics in general and about animal treatment in particular: indirect-duty views, contractarianism, the "cruelty-kindness" view, and Utilitarianism. For each of those views: first, articulate the view; and second, state Regan's main reason for rejecting it as inadequate.
  - b. Instead of the above theoretical approaches, Regan advocates what he calls the "rights view." Explain: first, what that view is; and second, Regan's main reasons for why it's the superior approach to ethics.
3. Now accurately and fairly reconstruct Regan's argument for animal rights. In doing so, make sure to state the scope of the argument's conclusion regarding the extent of our moral obligations to animals.
4. Now logically evaluate Regan's argument: assess it with the vocabulary and tools of logic and critical thinking that we've developed so far in the course. In other words, you should be thinking in terms of whether his argument (as reconstructed in step 3 above) is deductive or inductive, valid, sound, etc. On that note, you'll want to consider whether the main premises (or "reasons") he gives in his argument are true or false. Does he rely on any unstated or unsubstantiated assumptions? Etc.
5. Based on step 4, you will now draw your final conclusions about the strength of Regan's overall case for animal rights. As indicated above (1c), your final conclusion should concern whether, according to your analysis, Regan succeeds or fails in making his case. This final phase of your paper should include:
  - a. your argument(s) for your final conclusion(s).
  - b. a clear, logical justification for any failures you that attribute to Regan's argument.

# Population Demographics

## + Safety Box

- There are no safety hazards associated with this exercise.

## Objectives

Be able to do the following:

1. Define these terms in writing.

crude birthrate

crude deathrate

total fertility rate

demography

2. Calculate annual rate of population change and doubling time.
3. Construct graphs to illustrate the relationships among population variables.

## Introduction

The impact humans have on the Earth is often characterized by the following equation:

$$I = P \times C \times T$$

$I$  = Impact on natural Earth systems per unit time

$P$  = Human population

$C$  = Consumption per person per unit time

$T$  = Technology factor (high for environmentally destructive technology, low for environmentally friendly technology)

It makes sense that larger numbers of people will have a greater effect on Earth systems than fewer people. The equation  $I = P \times C \times T$  captures this relation in a simple expression. Any change in the population ( $P$ ) will have a major effect on the impact ( $I$ ) unless consumption ( $C$ ) or technology ( $T$ ) change significantly.

The study of population demographics concentrates on the descriptive characteristics of human populations, including issues such as changes in the size and structure of populations and rates of population change. The world-wide human population is currently experiencing rapid growth. As human population growth continues, the equation  $I = P \times C \times T$  indicates that the resulting impact on Earth's natural systems will also increase (unless consumption per person is reduced or environmentally friendly technology replaces current technology).



**Demography** is the study of the characteristics of human populations, such as size, growth, density, distribution, and vital statistics. Demographers use the following equations to calculate the key factors that describe changes in population characteristics:

$$\text{crude birthrate (births/1,000)} = \left( \frac{\text{live births per year}}{\text{mid-year population}} \right) \times 1,000$$

$$\text{crude deathrate (deaths/1,000)} = \left( \frac{\text{deaths per year}}{\text{mid-year population}} \right) \times 1,000$$

$$\text{annual rate of population change \%} = \left( \frac{\text{birth} - \text{deathrate}}{10} \right)$$

$$\text{population doubling time (years)} = \left( \frac{70}{\text{annual rate of population change [\%]}} \right)$$

Total fertility rate = number of children born per woman

The population growth rate has been correlated to a number of factors that affect the birthrate, the deathrate, or both. The following factors appear to influence the birthrate:

1. Level of education and wealth
2. Importance of children for family labor purposes
3. Urbanization—higher birthrates in rural areas
4. Cost of raising children
5. Education and employment opportunities
6. Average age at marriage
7. Availability of birth control
8. Cultural norms

The following factors influence deathrate:

1. Nutrition
2. Sanitation
3. Advances in available health care
4. Ability to afford medical care

# 18 Population Demographics

Name \_\_\_\_\_ Lab section \_\_\_\_\_

Your instructor may collect these end-of-exercise questions. If so, please fill in your name and lab section.

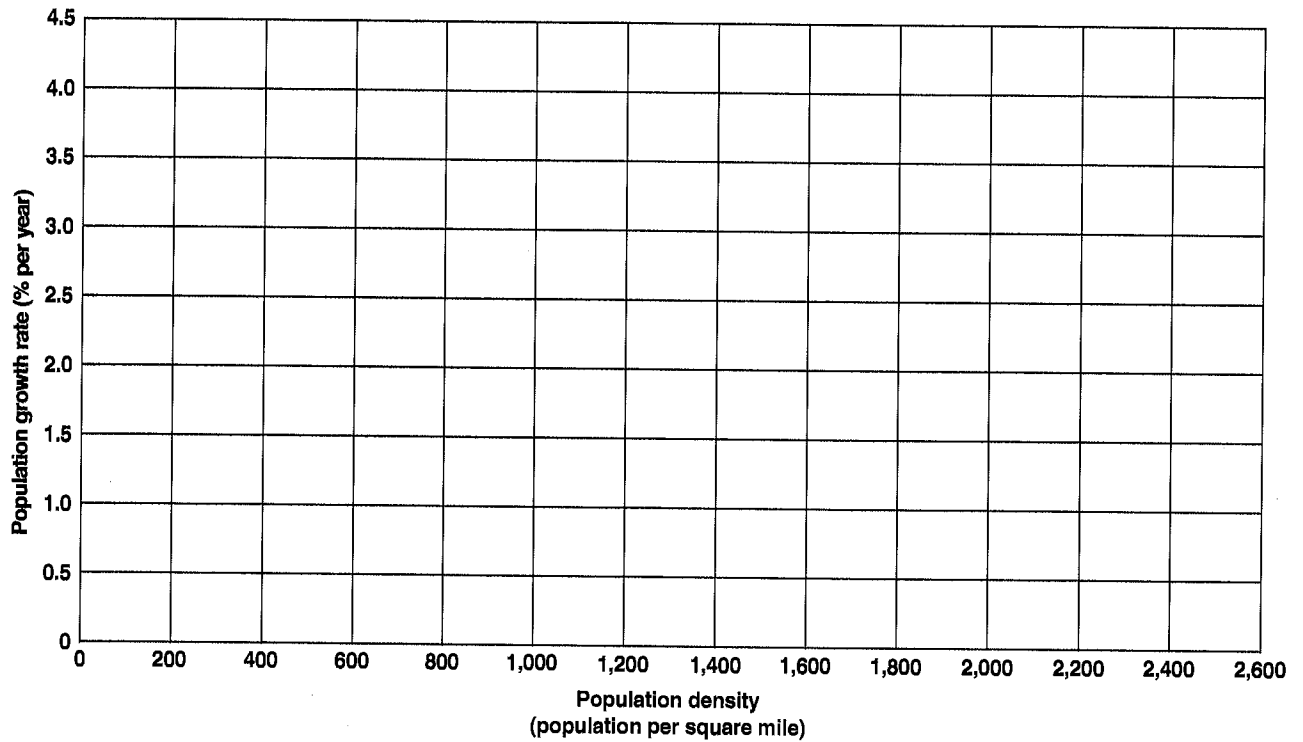
## Procedure

**Calculate annual rate of population increase and doubling time.** Use the information in the following table and the formulas on page 194 to calculate the annual rate of population increase and the doubling time for the populations of the countries listed.

Country	Population Density (People per Square Kilometer)	Total Fertility Rate	Crude Birthrate (Births per 1,000)	Crude Deathrate (Deaths per 1,000)	Annual Rate of Population Change (%)	Doubling Time (Years)
1. Afghanistan	119	6.8	47	21		
2. Bangladesh	1,035	3.0	27	8		
3. Dominican Republic	192	2.9	24	5		
4. France	112	2.0	13	9		
5. Hungary	108	1.3	10	13		
6. Mexico	54	2.4	21	5		
7. Netherlands	394	1.7	11	8		
8. Russia	8	1.3	10	15		
9. United States	31	2.1	14	8		
10. Zimbabwe	34	3.8	31	21		

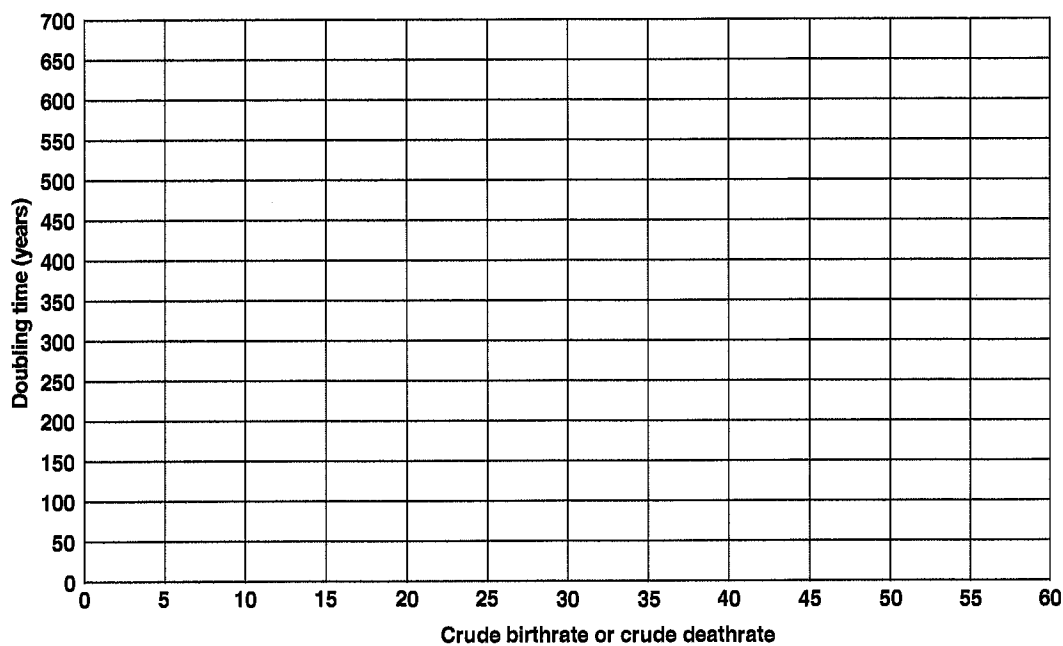
Source: Data from 2007 World Population Data Sheet, Population Reference Bureau, Inc., Washington, DC.

Plot the relationship between annual rate of population growth and population density on the following graph.



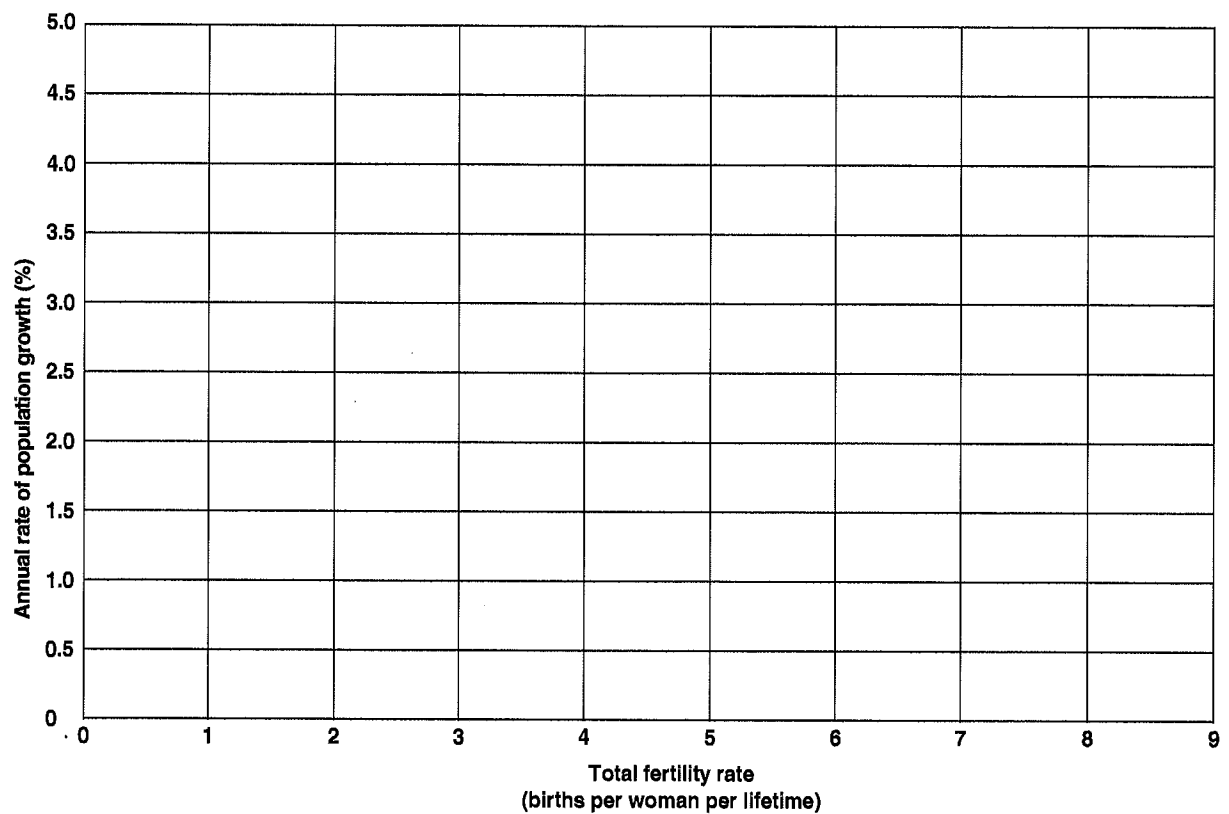
1. Does the annual rate of population change appear to be related to population density? (*Hint:* The two factors, population density and annual rate of population change, are very strongly correlated if you can draw one straight line and connect all the points. If you can draw a line that most of the points cluster near, the two factors are correlated less strongly. If there is no straight line that the points cluster near, the two factors are not correlated.)

**Draw a graph of the relationship between the doubling time and the crude birthrate on the graph provided.**  
 On the same graph, plot the relationship between crude deathrate and doubling time. Plot the two sets of data with different colors.

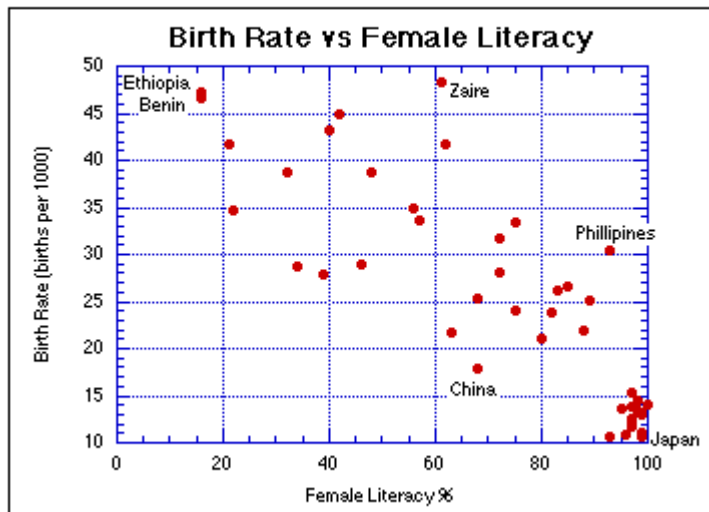


2. Which of the two (birthrate or deathrate) is most closely related to doubling time (i.e., which of the two sets of data is closer to a straight line)?

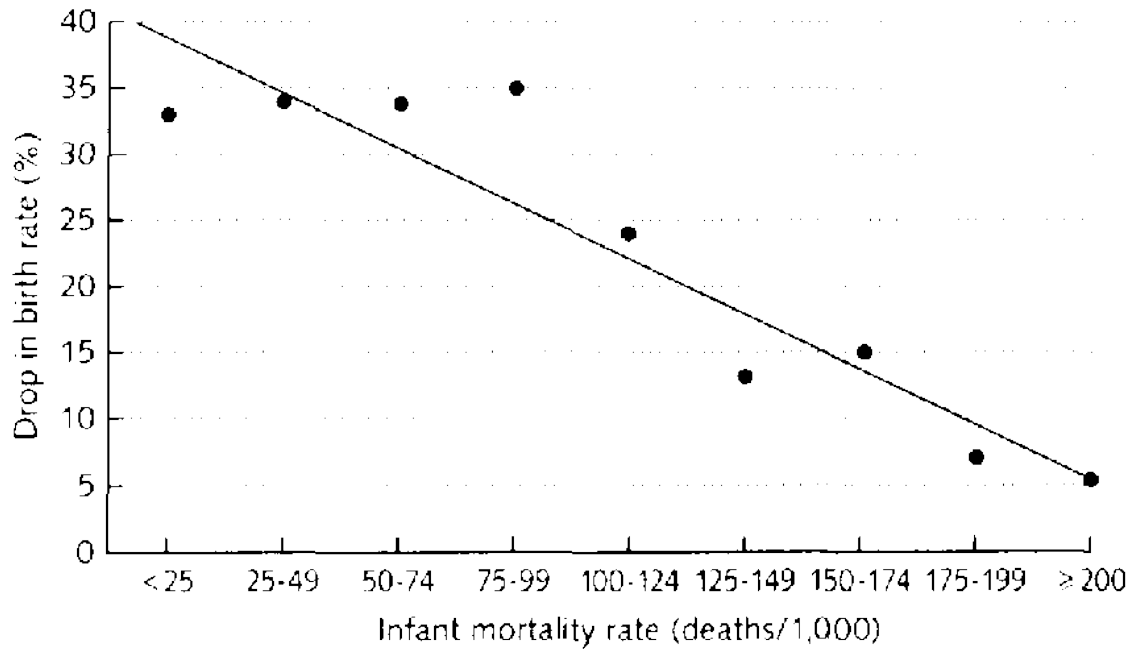
Plot the relationship between total fertility rate and annual rate of population growth on the following graph.



3. Is there a strong correlation between the number of births per woman and the annual rate of increase?



4. Given the above graph, is there a strong correlation between the number of births per woman and the percentage of women who are literate? (1pt)

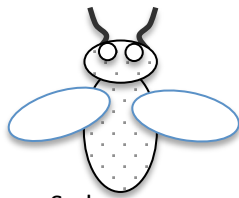


5. Given the above graph, is there a strong correlation between the number of births per woman and infant mortality rate? (1pt)
  
6. Given all the above information, what changes in policy would slow the human birthrate? (2pts)
  - a. Knowing this, what can YOU do to slow human population growth? (1pt)
  
  - b. Do you have a moral obligation to do so? Why or why not? (1pt)
  
7. What biological principle(s) explain these relationships? (1pt)
  - a. Why?(2pts)

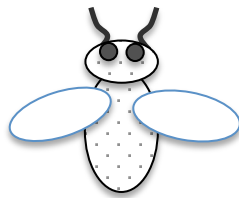
# SAMPLE ASSESSMENT

## Phylogenetics Quiz

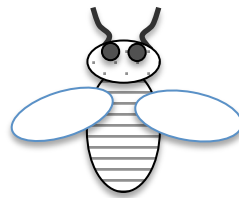
The individuals pictured below each represent a different species. Syd represents the outgroup, the others represent the ingroup taxa. First, fill out the character table (I did the first two characters) and then, using the cladogram pictured, fill in the terminal taxa (the names of the individuals) and the synapomorphies where indicated on the cladogram.



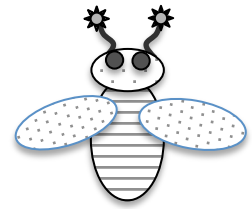
Syd  
(outgroup)



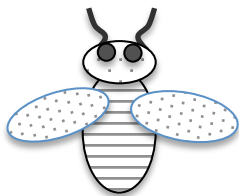
Gus



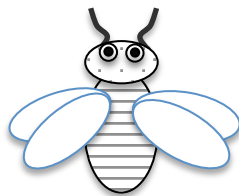
Sam



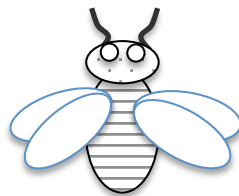
Aya



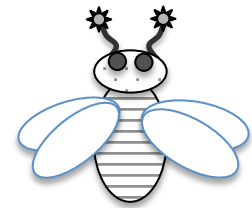
Tom



Ike

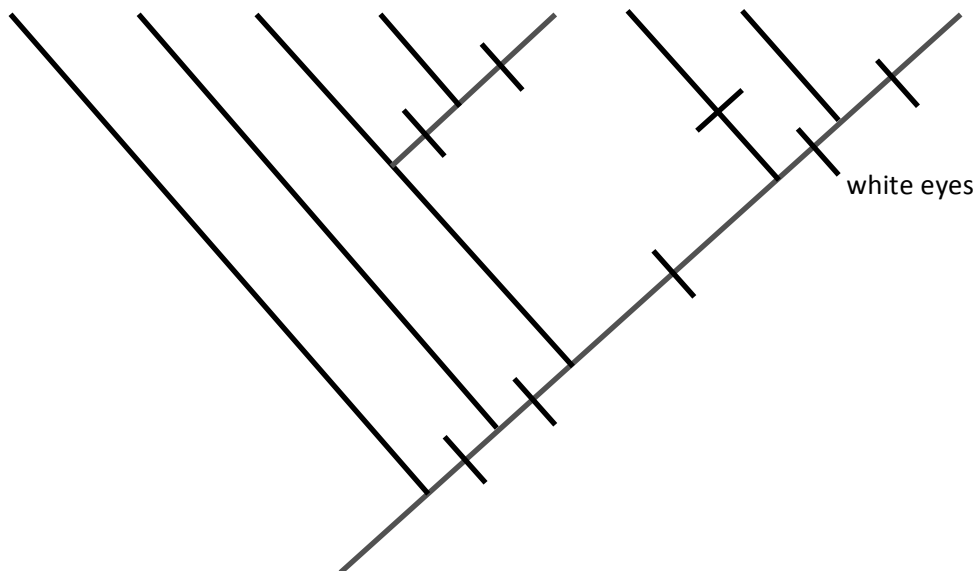


Sky



Lea

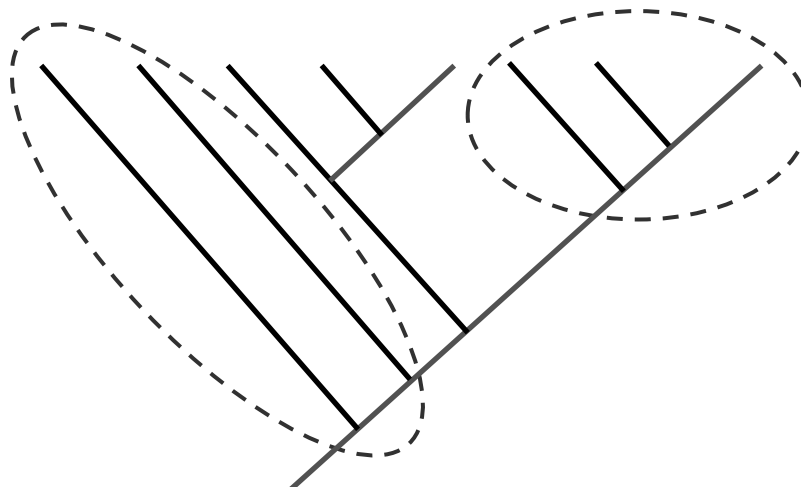
character	outgroup	ingroup						
	Syd	Gus	Sam	Aya	Tom	Ike	Sky	Lea
polka dots on body	x	x						
grey/white eyes	white	grey	grey	grey	grey	white	white	grey
stripes								
patterned wings								
antenna stars								
2 pairs of wings								
pupils								





Referring to the character table and cladogram, answer the following questions ...

1. List two symplesiomorphies of the ingroup.
2. List the synapomorphy of Ike, Sky, and Lea.
3. There should be two homoplastic characters in the cladogram. List the convergence and the character reversal.  
convergence  
character reversal
4. Which individuals comprise the sister group to Lea + Sky + Ike?
5. List the autapomorphic character in the cladogram.
6. Can a character state simultaneously be symplesiomorphic and synapomorphic? Explain and use examples from the cladogram.
7. Label the circled groups below as monophyletic, paraphyletic, or polyphyletic.



Name:

**EXAM**  
**CHEM 110 Introductory Chemistry**

You should only have your pen/pencil, calculator, periodic table, polyatomic ion chart and solubility chart on your desk. Use the restroom before you start, if you leave the room you need to turn in your exam. No cellphones allowed. Each question is worth 5 points. Answer accordingly. Good luck!

1. Which of the following is an element?
  - a) Sugar
  - b) Salt
  - c) Chlorine
  - d) Air
2. When a sample of wood is burned, the mass of the reactants is 100 grams. If 15.0 g of ash is one product, what is the mass of the other products?
  - a) 115 g
  - b) 100. g
  - c) 85 g
  - d) 15.0 g
  - e) 1.0 g
3. Convert 233 K to °F and express the answer to the correct number of significant figures. (note:  $1\text{K} = ^\circ\text{C} + 273.15$  and  $1\text{F} = (9/5)^\circ\text{C} + 32.0$ )
  - a)  $-40.0^\circ\text{F}$
  - b)  $-40^\circ\text{F}$
  - c)  $40.0^\circ\text{F}$
  - d)  $233^\circ\text{F}$
  - e)  $943^\circ\text{F}$
4. What particle(s) is/are found in the nucleus?
  - a) Electron
  - b) Neutron
  - c) Proton
  - d) Electron and proton
  - e) Proton and neutron
5. Sketch the diagram of Phosphorous atom, make sure to show how many protons, neutrons and how many electrons it has, indicating the ones in the outer shell.

6. Identify the following compounds as atomic element, molecular elements, molecular or ionic compounds.

SO<sub>2</sub> \_\_\_\_\_

Pt \_\_\_\_\_

CaO \_\_\_\_\_

Na<sub>2</sub>CrO<sub>4</sub> \_\_\_\_\_

NO<sub>2</sub> \_\_\_\_\_

7. A certain oxyacid is derived from the oxyanion SO<sub>4</sub><sup>2-</sup>. What is the formula for the oxyacid?

8. Write the following chemical formulas

A) Copper(II) fluoride

B) Sodium carbonate

C) Silver Sulfate

D) Iron(III) Chloride

9. What is the molecular weight of nitrogen dioxide is \_\_\_\_\_.

10. A 500. gram iron ore sample was determined to contain 242 grams of iron. What is the mass percent of iron in the ore?

A) 93.7

B) 48.4

C) 51.6

D) 32.6

11. Which of the following is NOT a sign of a chemical reaction?

A) absorbing heat when chemicals are contacted with each other

B) change of color when chemicals are contacted with each other

C) The melting point of a substance.

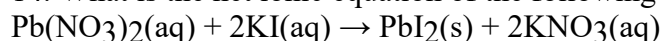
12. Sodium metal reacts with water to form aqueous sodium hydroxide and hydrogen gas. Which equation below best describes the balanced equation for this reaction?

- A)  $\text{Na(s)} + \text{H}_2\text{O(l)} \rightarrow \text{NaOH (aq)} + \text{H (g)}$
- B)  $\text{S (s)} + \text{H}_2\text{O(l)} \rightarrow \text{SOH (aq)} + \text{H (g)}$
- C)  $2\text{Na(s)} + 2\text{H}_2\text{O(l)} \rightarrow 2\text{NaOH (aq)} + \text{H}_2 \text{ (g)}$
- D)  $2\text{Na(s)} + \text{H}_2\text{O(l)} \rightarrow \text{Na}_2\text{OH (aq)} + \text{H (g)}$

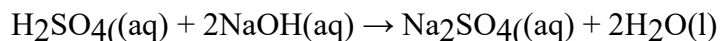
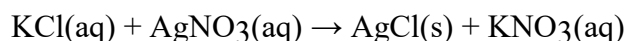
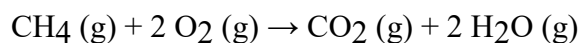
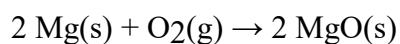
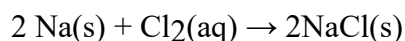
13. Which of the following compounds is INSOLUBLE?

- A) potassium acetate
- B) lithium carbonate
- C) magnesium bromide
- D) aluminum sulfide

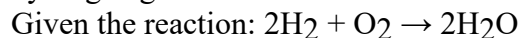
14. What is the net ionic equation of the following reaction?



15. Identify the following reactions as many ways as possible, among: redox, acid-base, precipitation, gas evolution, single displacement, double displacement, synthesis, decomposition, combustion.



16. How many moles of water are made from complete reaction of 2.2 moles of oxygen gas with hydrogen gas?



- A) 4.4
- B) 1.1
- C) 2.2
- D) 3.3

17. What is the theoretical yield of iron (II) chloride if I start with 24 g of Iron (II) bromide  
 $\text{FeBr}_2 + \text{KCl} \rightarrow \text{FeCl}_2 + 2\text{KBr}$

18. How many moles of aluminum are needed to make 9 moles of molecular hydrogen?  
Given the reaction:  $2 \text{Al} + 6 \text{HCl} \rightarrow 2 \text{AlCl}_3 + 3\text{H}_2$

- A) 2 moles
- B) 3 moles
- C) 4 moles
- D) 6 moles
- E) none of the above

19. How many eggs are needed to make 1 dozen waffles, assuming you have enough of all other ingredients?

Given:  $2 \text{ cups flour} + 3 \text{ eggs} + 1 \text{ tbs oil} \rightarrow 4 \text{ waffles}$

- A) 48
- B) 9
- C) 12
- D) 16

20. If the theoretical yield of a reaction is 42.0 grams of product and the percent yield is 75%.  
How many grams were actually produced?

- A) 5400
- B) 56
- C) 32
- D) 1.8
- E) none of the above

$$\text{Percent yield} = \frac{\text{Actual Yield}}{\text{Theoretical Yield}} \times 100\%$$

Rubric for assessment of “killing the Buddha” lab

Number of groups assessed =

Enter the number of groups that fall into each category.

Essential Skill: Social and personal responsibility	Unacceptable	Acceptable	Target
Civic discourse	Data clearly contradicts plausible (but incorrect) idea but group reports consistency with incorrect idea.	Data of insufficient quality to disprove plausible (but incorrect) idea and group reports appropriate conclusion.	Data clearly contradicts plausible (but incorrect) idea and group reports failure of plausible idea.

## Galileo's Pendulum

### INTRODUCTION

In 1624 Galileo published *Dialogues Concerning Two New Sciences*, in which he presented many of his ideas and discoveries concerning physics and astronomy. In this book, he makes the following statement about the period of the simple pendulum:

"I never dreamed of learning that one and the same body when suspended from a string a hundred cubits long and pulled aside through an arc of 90 degrees or even 1 degree or 1/2 degree would employ the same time in passing through the largest of these arcs ... each pendulum has its own time of vibration so definite and determinate that it is not possible to make it move with any other period than that which nature has given it

... if two persons start to count the vibrations, the one the large, the other the small, they will discover that after counting tens and even hundreds that they will not differ by a single vibration, not even a fraction of one ... This observation justifies ... the following proposition ... namely, that vibrations of very large and small amplitude all occupy the same time."

Galilei, G. *Dialogues Concerning Two New Sciences*, translated by H. Crew and A. de Salvio, Dover 1954. pp 97,254-55.

Put briefly, Galileo's assertion is this: the period (time for one complete swing) of the simple pendulum is independent of the arc through which it swings. The purpose of this lab is to test this assertion experimentally.

### EQUIPMENT

pendulum (at least about a meter or yard of string tied to a small object like a nut), protractor, and stop watch.

### EXPERIMENTAL METHOD

Measure the period for four different amplitudes ( $\approx 10^\circ$ ,  $\approx 30^\circ$ ,  $\approx 45^\circ$ ,  $\approx 80^\circ$ ). Time single swings, not 10 repetition, since the larger amplitude motions decay rapidly with repetition. Perform each measurement five times. Calculate and plot the data.

### INTERPRETATION

Upload your Excel file under the appropriate Bb assignment and use the

"Write Submission" button to answer the following questions:

1. What should your graph look like if Galileo's conjecture is correct?
2. Are your data consistent with Galileo's conjecture?

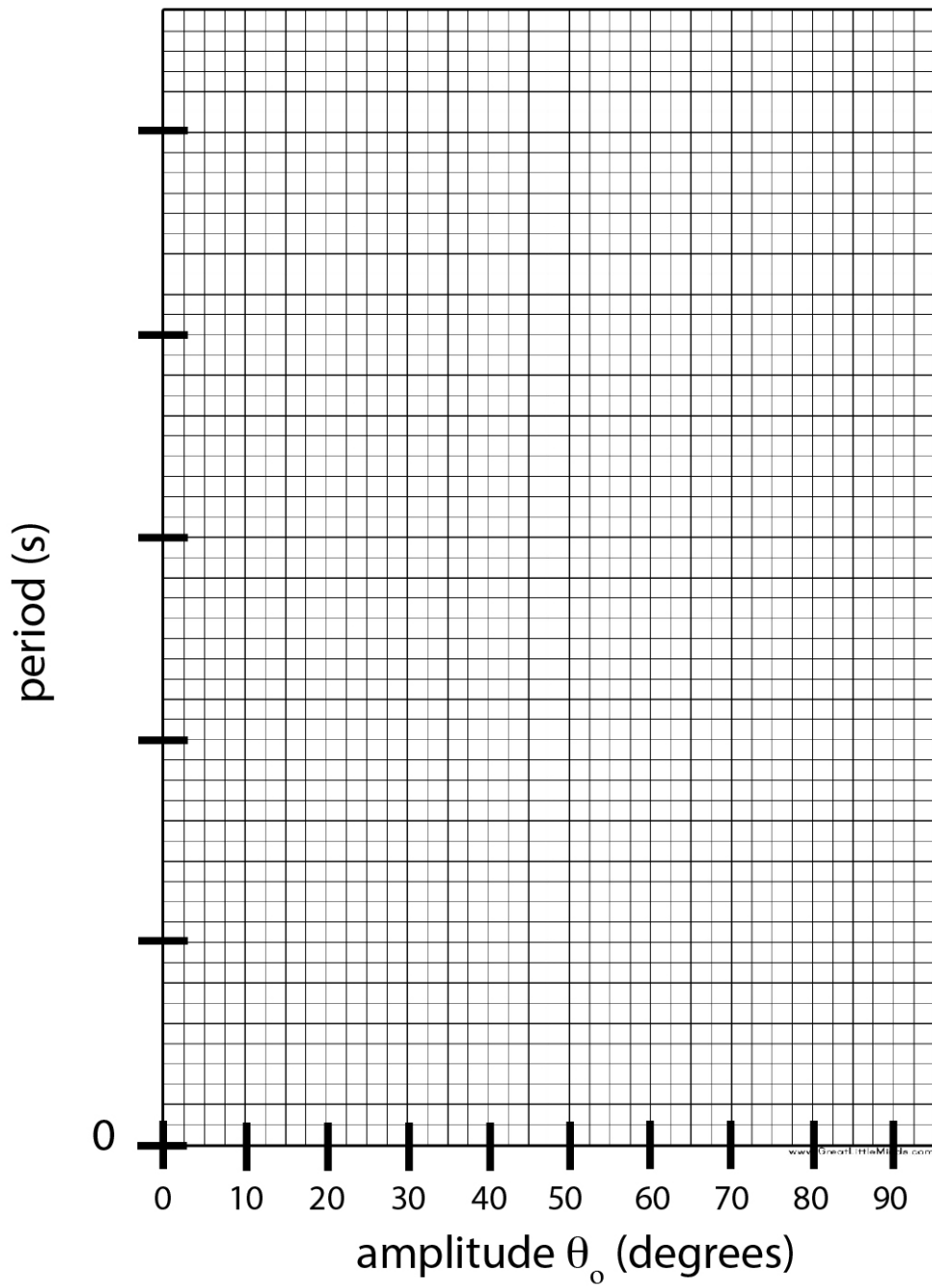
Answer the question: Are your data consistent with Galileo's proposition that the pendulum period does not depend on the amplitude? Briefly explain how your data lead you to your conclusion.

# DATA

Length (cm)	Period 1 (s)	Period 2 (s)	Period 3 (s)	Period 4 (s)	Period 5 (s)	Mean period (s)	SDM period (s)
10°							
30°							
45°							
80°							



# Dependence of period on amplitude



# ENG 223 (CC# ENGL 2610) American Literature I

RUBRIC for Writing Assignments

## Rubric for Writing Assignment

**50 points possible**

2-3 pages, double spaced, 12-point Times New Roman font, 1-inch margin

**Objectives:** Practice analysis of literary work.

**Key Points for Analysis:**

- Identify the reading by its title or author, or the particular discussion.
- Make connections with your own experience and/or with other texts.
- How will you use this text to further your understanding of literature?

**Criteria** – Refer to the Instructions and Samples before submitting.

**Inclusion of Media file (if part of the assignment): 6 points \_\_\_\_\_/6\_**

Relevance, value to audience

**Depth of Analysis: 25 points \_\_\_\_\_/25\_**

Novice 0 (0%)–12 (25%) points

Demonstrates limited effort at engaging the reading and criticism.

Competent 13 (50%)–20 (75%) points

Demonstrates a conscious and thorough understanding of the work, its context, and subject matter.

Proficient 21 (80%)–25 (100%) points

Considers and evaluates the reading and criticism extensively.

**Use of Evidence: 15 points \_\_\_\_\_/15\_**

Novice 0 (0%)–5 (16%) points

Uses incomplete or vaguely-developed examples to support claims, with limited text-to-text, text-to-criticism, and text-to-self connections.

Competent 6 (30%)–11 (50%) points

Uses relevant examples from the texts studied to support claims. Makes insightful and applicable text-to-text and text-to-self connections.

Proficient 12 (66%)–15 (100%) points

Demonstrates a commitment to use the insights toward educational goals. Poses questions and challenges author claims.

**Conventions and Citations—10 points \_\_\_\_\_/10\_**

Novice 0 (0%)–3 (33%) points

Uses language that is vague or imprecise for the audience or purpose, with little sense of voice, and limited attempts to vary sentence structure. Exhibits frequent errors in spelling, verb tense, subject-verb agreement, punctuation, pronouns, and possessives. Appears to quote but includes no mention of source.

Competent 4 (40%)–6 (60%) points

Uses precise language with a sense of voice, awareness of audience, and varied sentence structure. Demonstrates control of prose with few errors. Identifies sources with attempt to format.

Proficient 7 (70%)–10 (100%) points

Speaks and writes with authority. Uses language that is precise and engaging, with notable sense of voice, awareness of audience and purpose, and varied sentence structure. Demonstrates control of the conventions with essentially no errors, even with sophisticated language. Consistently and specifically identifies sources demonstrating mastery of format.

# Clovis Community College

## ENGL 223-1N0 (CC# 2610)

American Literature I

Spring, 20XX

INSTRUCTOR:

OFFICE:

OFFICE PHONE:

OFFICE HOURS: Mon 3:00-5:00; Tue 1:30-4:30; Wed 1:30-3:00; Thur and Fri by apt.

E-MAIL: Communicate with me through the email feature of Canvas. If Canvas is down, please try...

I will check and respond to all mail messages at least four times a week, Sunday through Saturday, with no more than 72 hours between checking the system.

TEXTS:

*The Bedford Anthology of American Literature, Vol. 1*

2<sup>nd</sup> Edition, S. Belasco & L. Johnson

ISBN 978-00312-67868-5

**NOTE: All exams will be proctored. Students must make a satisfactory proctoring arrangement.** (More information below.)

### COURSE DESCRIPTION:

From Native American legends and the literature of exploration to the American Renaissance, this course surveys American literature to the mid-nineteenth century. This course provides students with the contexts and documents necessary to understand the origins of American literature and the aesthetic, cultural, and ideological debates central to early American culture.

### COMMON COURSE STUDENT LEARNING OUTCOMES

1. Recognize the traditions of American literature and their connection to issues of culture, race, class, and gender.
2. Demonstrate familiarity with a variety of major works by American authors.
3. Explore the various influences and sources of American literature.
4. Apply effective analytic and interpretive strategies to American literary works using academic conventions of citation and style.

**ONLINE COURSE ATTENDANCE:** In an online course, "attendance" is recorded when a student logs into class AND does at least one other action (such as turning in an assignment or posting a message). Simply logging in is not enough to count as "attendance." Attendance is required at all sessions in each course for which the student is enrolled. Consult

the college catalog for specific information regarding limits for absences. Students on financial aid and VA programs may have additional attendance requirements or restrictions. Check with the Financial Aid / VA Office for more information.

**CCC E-MAIL:** All CCC students have a CCC email account. It is set up when students enroll. Campus-wide messages and important information go to your CCC email inbox. To access student email, log onto Pathway, and click the Student Icon on the top-right.

**STARFISH:** Clovis Community College uses Starfish Early Alert as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service. To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at [www.clovis.edu/students/starfish.aspx](http://www.clovis.edu/students/starfish.aspx). If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

**WITHDRAW:** If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. Instructors do not withdraw students. Dual credit students must contact their high school counselor.

#### **QUALIFIED STUDENTS WITH DISABILITIES:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the [Special Services](#) Office (575-769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met.

#### **ONLINE TUTORING:**

CCC now offers free online tutoring in most academic subjects. Access BrainFuse through [Pathway](#) for a live online session with a professional tutor. Click [HERE](#) to see how to access Brainfuse online tutoring.

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#### **SAFEGUARDS:**

Back up all work in a memory device and make a hard copy; computers are not infallible. It is the student's responsibility to ensure that his/her computer is functioning properly.

**NETIQUETTE:** Netiquette is using good manners in cyberspace. Since most of our communication will be in text, be sure your words express the proper tone. Remember e-mail can be read by anyone. Making personal attacks or sending threats is unacceptable and will be reported per the guidelines up to and including administrative withdrawal from the course. Whether you are in a chat room, writing an e-mail or posting to a discussion area, remember to use proper netiquette and be considerate of others. If you would like to read more on the subject of netiquette, use the links below.

<http://www.iwillfollow.com/email.htm>

<http://www.albion.com/netiquette/corerules.html>

**EMERGENCY ALERT:** Since our class is online, service interruptions are very unlikely. In case of an unscheduled Canvas outage, please submit homework via email to my email address (listed above). However, in case of relevant campus

closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

**TECHNOLOGY REQUIREMENTS:** Canvas is designed for maximum compatibility and

minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please click here to see basic computer specifications for Canvas. Please keep in mind that computers are available for student use in the library.

**TECHNICAL SUPPORT:** CCC Help Desk support is available Mon – Fri, 8:00 am – 4:30 pm at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom.

You may also find answers to common questions / problems on [eCampus](#) and click on the tab titled “Technical Support.” If the hyperlink does not work, please enter <http://www.clovis.edu/Type4.asp?pageid=ecindex> into your browser.

**PRMARORING INFORMATION:** Most online courses require a proctor for exams. The following are CCC approved proctor options:

- CCC's Testing Center (No fee for CCC students // ID required)
- Military Education Centers (may have a fee // DoD ID required)
- Testing Centers at other Colleges / Universities (may have a fee // ID required)
- PrMarorU (has a fee // webcam required // 2 forms of ID required)

If you live within 50 miles of Clovis, NM, you will be required to take your proctored exam at CCC's Testing Center or use ProctorU. If you live 51+ miles from Clovis, NM you may use any of the above proctor options. Students with a valid DoD ID card may use a military education center, if desired.

It is the student's responsibility to find a suitable proctor, make testing arrangements, and pay any associated fees for proctoring services. Be aware that ALL proctors require a valid photo ID, some proctors charge a fee, and some proctoring options require a webcam.

Dual credit students should contact their instructor for special instructions.

Students must report their proctor choice to their instructor. Please refer to your syllabus and instructor's directions for more details, deadlines, and further information. If you need CCC's Proctor Approval Form, it is linked in Online Course Information.

## ONLINE CLASS POLICIES

### VIEWING OF FILMS:

The viewing of specific films is a requirement of this class. These films are embedded in the course section. However, even using the embed, watching a film will require broadband and the time necessary to make it through the films. Some films may be better experienced in DVD or Blu-Ray, which students may wish to arrange for themselves.

## SUBMISSION OF ASSIGNMENTS:

You are responsible for getting and turning in all assignments on time. This setup of Canvas makes no exceptions, and if you are late trying to post your assignment, it will likely not accept it. Furthermore, we move way too fast in this class for late assignments. NOTE: If you have technical difficulties uploading your assignment into the course dropbox, send the project to me via the course email or college email. Any paper sent to me through these email addresses/ alternative means must have a proper time stamp for it to be read, but at least you need not lose hope due to a technical glitch. Although, choosing not to wait till the last minute will always serve you better, as most technical problems can be solved in a reasonable period of time.

## GRADING POLICY:

Your grade in English 223 will be based on the following percentages (**approximately**):

6 discussions	xx pts. each	XXX points	XX%
6 Projects	xx pts each	XXX points	XX%
6 quizzes	xx pts each	XXX points	XX%
1 Final Exam	xxx pts	XXX points	XX%
Total		XXX points	100%

The grading scale (a standard one) is as follows:

90-100% = A

80-89% = B

70-79% = C

60-69% = D

Below 60% = F

All written work submitted for a grade (including essays) must be double-spaced, 12-point font, with one-inch margins unless otherwise specified. MLA style is the default if questions arise.

I want all of my students to succeed, and I am willing to work with you toward that goal. Therefore, if any special circumstances arise for you during the semester, please talk to me about it. Depending on the situation, I might advise you to drop the class, or perhaps we can work things out. *Communication is the key.*

## ACADEMIC DISHONESTY:

Academic dishonesty is an act by a student to use and/or represent the work of other individuals as that of his or her own production and/or creation. Academic dishonesty is unacceptable within the campus and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor's evaluation of the severity of the dishonest act. Consult the college catalog for more information on the institutional policy on academic dishonesty.

## GENERAL INFORMATION:

Check the current college academic calendar at [pathway.clovis.edu](http://pathway.clovis.edu) for information concerning course withdrawal deadlines.

## Book Companion Site

Bedford St Martin's, the publishers of the textbook for this class, have developed a companion website. It offers —abundant resources for students|| including a Virtualit Interactive Tutorial in Fiction, Poetry, and Drama.

[www.bedfordstmartins.com/meyerlit](http://www.bedfordstmartins.com/meyerlit)

I cannot recommend it enough.

## Readings Schedule and Assignments

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### Module 1: Before Europe Comes to the Americas

Weeks 1-2

#### Readings for Module 1

"Literature to 1750"—pp. 2-27, and especially the Timeline, pp. 22-27

"Native American Origin and Creation Stories," pp. 29-71

- Module 1 Discussion: How do we read Native American Stories?
- Module 1 Quiz
- Module 1 Project

### Module 2: Exploration and Colonization

Weeks 3-5

#### Readings for Module 2:

"Explorations and Early Encounters," pp. 73-78

Christopher Columbus: pp. 78-86, including the Letter of Columbus, pp. 81-86.

de Vaca: pp. 87-99, including the Narrative

de Champlain: 99-105

"Colonial Settlements," pp. 107-120

Captain John Smith, p. 120-123

--from the *Generall Historie of Virginia, New-England, and the Summer Isles*, from The Third Book, Chapter II pp. 123-132

William Bradford pp. 142-145

From *Of Plimoth Plantation*, from Booke 1, pp. 145-157

Wamsutta (Frank B. James)

"Suppressed Speech," pp. 167-170

Anne Bradstreet, pp. 185-187

"The Prologue," pp. 188-189

"To Her Father with Some Verses," p. 195

"The Author to Her Book," p. 199

"American Contexts": "The Salem Witchcraft Trials," pp. 252-256

- Module 2 Discussion: Explorer Attitudes
- Module 2 Quiz
- Module 2 Project

### Module 3: From Colonies to Country 1750-1830

Weeks 6-8

#### Readings for Module 3

Textbook introduction: pp. 368-391 (with its many visuals).

B. Franklin: Excerpt from *Autobiography*,: Part Two, pp. 449-464.

T. Paine: Excerpt from *Common Sense*, pp. 549-552.

T. Jefferson: Draft of the *Declaration of Independence*, 558-562.

-----Excerpt from *Notes on the State of Virginia*, pp. 563-568.

G. Washington: Letter to the Touro Synagogue, pp. 569-570.

W. Irving: *Rip Van Winkle*, 631-643.

W.C. Bryant: *Thanatopsis*, pp. 689-691.

- Module 3 Discussion: New Secularism in America
- Module 3 Quiz
- Module 3 Project

## Module 4: Marginalized Voices

Weeks 9-11

### Readings for Module 4

O. Equiano: Excerpts from *Interesting Narrative*, , pp. 512-536.

H. Griffiths: "The Female Patriots," pp. 547-548.

A. Jones: *Petition of the People of Colour*, pp. 577-578.

Tecumseh: Speech to Governor Harrison, pp. 579-581.

P: Wheatley: Intro and poems plus "Wheatley Through a Modern Lens," pp. 599-613.

- Module 4 Discussion: A New Attitude Toward the Founders?
- Module 4 Quiz
- Module 4 Project

## Module 5: Sectionalism and War 1830-1865

Weeks 12-14

### Readings for Module 5

Introduction: pp. 708-725

Brownson: from *The Laboring Classes*, pp. 748-751.

Seneca Falls Woman's Convention: *Declaration of Sentiments*, pp. 754-756.

R.W. Emerson: *Self-Reliance*, pp. 824-842.

H. Beecher-Stowe: "Trials of a Housekeeper," pp. 899-903

H. Jacobs: "Incidents in the Life of a Slave Girl," pp. 919-942

H.D. Thoreau: *Resistance to Civil Government*, pp. 945-960

A. Lincoln: *The Gettysburg Address*, p. 1527.

N. Hawthorne: "Young Goodman Brown" pp. 1113-1122

E.A. Poe: "The Fall of the House of Usher," pp. 1173-1186

-----"The Tell-Tale Heart," pp.1186-1190

H. Melville: "Bartleby, The Scrivener," pp. 1227-1253

- Module 5 Discussion: A New Attitude Toward the Founders?
- Module 5 Quiz
- Module 5 Project



## Module 6: The Poetry of Discontents

Weeks 15-16

### Readings for Module 6

E.O. Smith: "The Drowned Mariner," pp.1363-1365  
H.W. Longfellow: "My Lost Youth," pp. 1368-1370  
W. Whitman: *Song of Myself*, pp.  
1393-1439 Dickinson: poems, pp. 1476-  
1499

- Module 6 Discussion: A New Poetry?
- Module 6 Quiz
- Module 6 Project

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**FINAL EXAM**

**PROCTOR REQUIRED**

**WEEK 16**

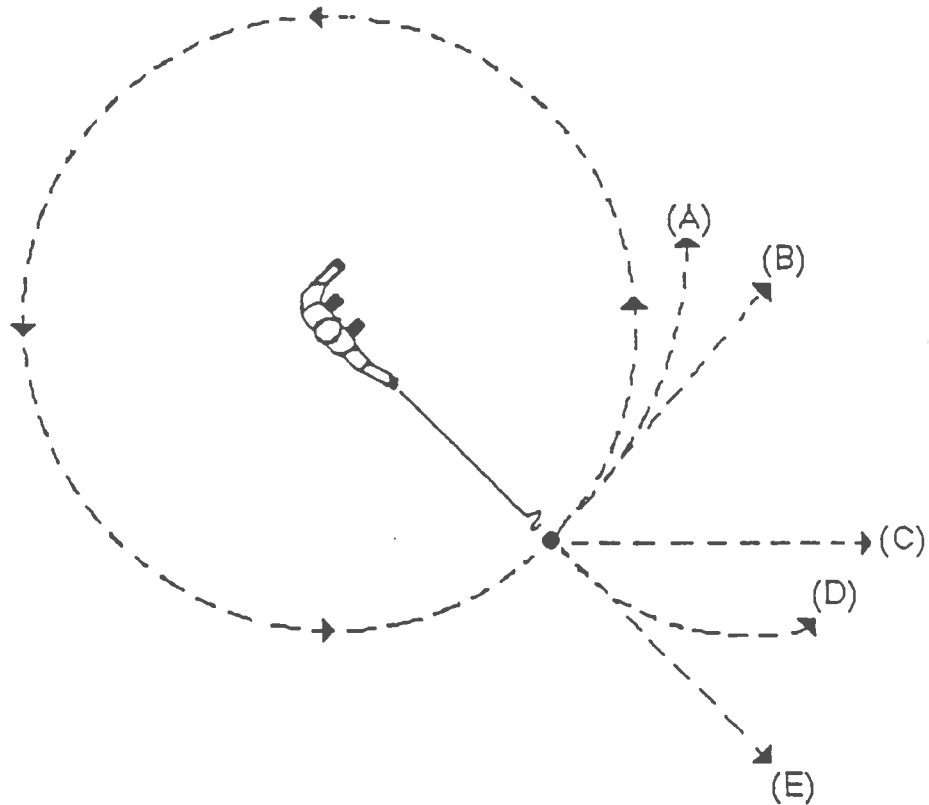
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## Force Concept Inventory

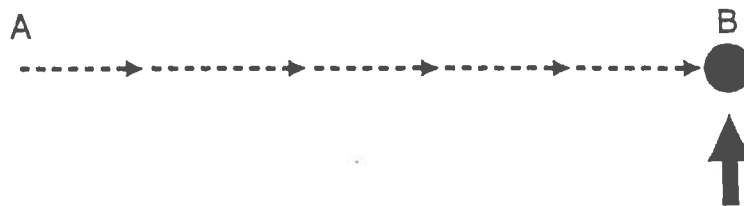
1. Two metal balls are the same size, but one weighs twice as much as the other. The balls are dropped from the top of a two story building at the same instant of time. The time it takes the balls to reach the ground below will be:
  - (A) about half as long for the heavier ball.
  - (B) about half as long for the lighter ball.
  - (C) about the same time for both balls.
  - (D) considerably less for the heavier ball, but not necessarily half as long.
  - (E) considerably less for the lighter ball, but not necessarily half as long.
2. Imagine a head-on collision between a large truck and a small compact car. During the collision,
  - (A) the truck exerts a greater amount of force on the car than the car exerts on the truck.
  - (B) the car exerts a greater amount of force on the truck than the truck exerts on the car.
  - (C) neither exerts a force on the other, the car gets smashed simply because it gets in the way of the truck.
  - (D) the truck exerts a force on the car but the car doesn't exert a force on the truck.
  - (E) the truck exerts the same amount of force on the car as the car exerts on the truck.
3. Two steel balls, one of which weighs twice as much as the other, roll off of a horizontal table with the same speeds. In this situation:
  - (A) both balls impact the floor at approximately the same horizontal distance from the base of the table.
  - (B) the heavier ball impacts the floor at about half the horizontal distance from the base of the table than does the lighter.
  - (C) the lighter ball impacts the floor at about half the horizontal distance from the base of the table than does the heavier.
  - (D) the heavier ball hits considerably closer to the base of the table than the lighter, but not necessarily half the horizontal distance.
  - (E) the lighter ball hits considerably closer to the base of the table than the heavier, but not necessarily half the horizontal distance.

4. A heavy ball is attached to a string and swung in a circular path in a horizontal plane as illustrated in the diagram below. At the point indicated in the diagram, the string suddenly breaks at the ball. If these events were observed from directly above, indicate the path of the ball after the string breaks.

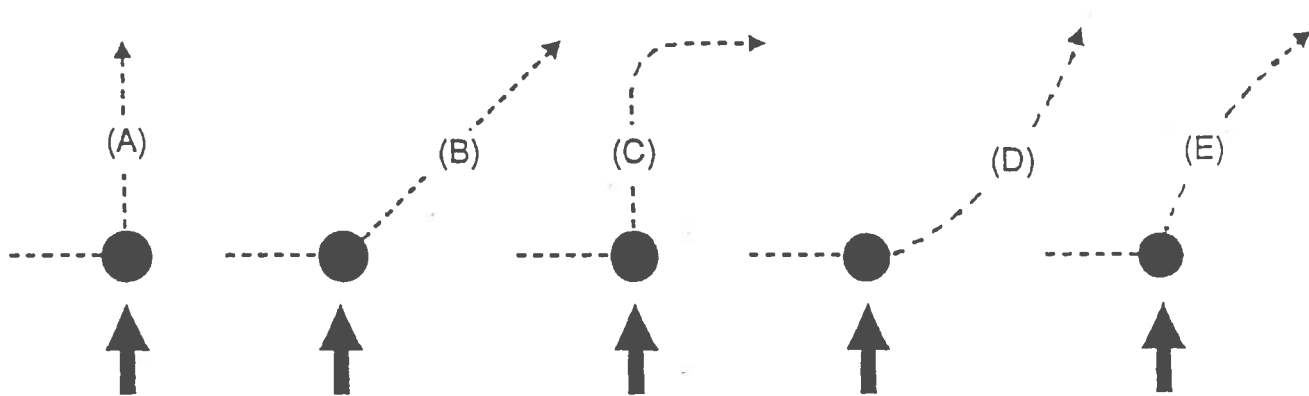


5. A boy throws a steel ball straight up. Disregarding any effects of air resistance, the force(s) acting on the ball until it returns to the ground is(are):
- (A) its weight vertically downward along with a steadily decreasing upward force.
  - (B) a steadily decreasing upward force from the moment it leaves the hand until it reaches its highest point beyond which there is a steadily increasing downward force of gravity as the object gets closer to the earth.
  - (C) a constant downward force of gravity along with an upward force that steadily decreases until the ball reaches its highest point, after which there is only the constant downward force of gravity.
  - (D) a constant downward force of gravity only.
  - (E) none of the above, the ball falls back down to the earth simply because that is its natural action.

- \* Use the statement and diagram below to answer the next four questions:
- \* The diagram depicts a hockey puck sliding, with a constant velocity, from point "A" to point "B" along a frictionless horizontal surface. When the puck reaches point "B", it receives an instantaneous horizontal "kick" in the direction of the heavy print arrow.

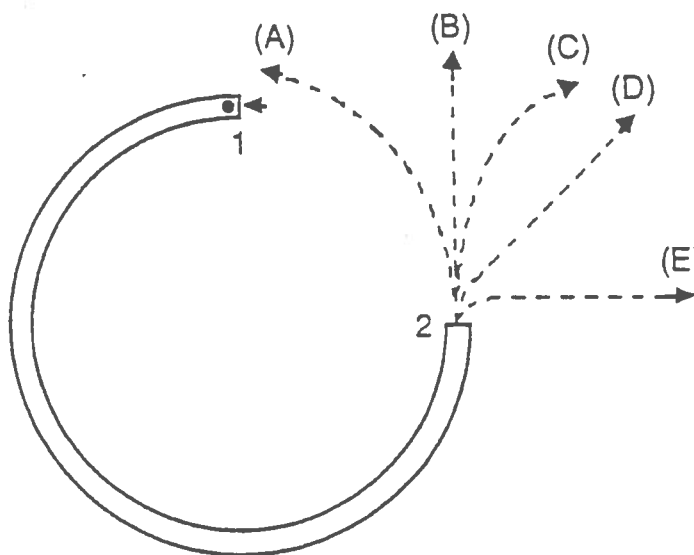


6. Along which of the paths below will the hockey puck move after receiving the "kick" ?

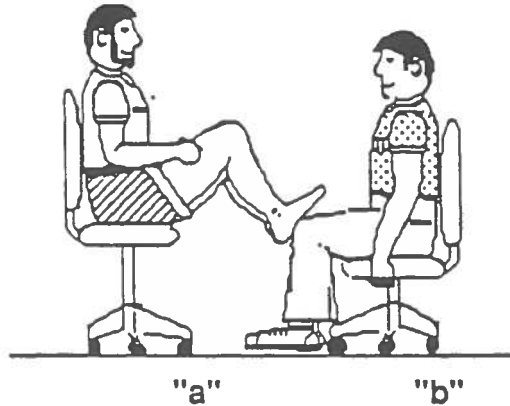


7. The speed of the puck just after it receives the "kick"?
- Equal to the speed " $v_0$ " it had before it received the "kick".
  - Equal to the speed " $v$ " it acquires from the "kick", and independent of the speed " $v_0$ ".
  - Equal to the arithmetic sum of speeds " $v_0$ " and " $v$ ".
  - Smaller than either of speeds " $v_0$ " or " $v$ ".
  - Greater than either of speeds " $v_0$ " or " $v$ ", but smaller than the arithmetic sum of these two speeds.
8. Along the frictionless path you have chosen, how does the speed of the puck vary after receiving the "kick"?
- No change.
  - Continuously increasing.
  - Continuously decreasing.
  - Increasing for a while, and decreasing thereafter.
  - Constant for a while, and decreasing thereafter.

9. The main forces acting, after the "kick", on the puck along the path you have chosen are:
- (A) the downward force due to gravity and the effect of air pressure.
  - (B) the downward force of gravity and the horizontal force of momentum in the direction of motion.
  - (C) the downward force of gravity, the upward force exerted by the table, and a horizontal force acting on the puck in the direction of motion.
  - (D) the downward force of gravity and an upward force exerted on the puck by the table.
  - (E) gravity does not exert a force on the puck, it falls because of the intrinsic tendency of the object to fall to its natural place.
10. The accompanying diagram depicts a semicircular channel that has been securely attached, in a horizontal plane, to a table top. A ball enters the channel at "1" and exits at "2". Which of the path representations would most nearly correspond to the path of the ball as it exits the channel at "2" and rolls across the table top.



- \* Two students, student "a" who has a mass of 95 kg and student "b" who has a mass of 77 kg sit in identical office chairs facing each other. Student "a" places his bare feet on student "b's" knees, as shown below. Student "a" then suddenly pushes outward with his feet, causing both chairs to move.



11. In this situation,

- (A) neither student exerts a force on the other.
- (B) student "a" exerts a force on "b", but "b" doesn't exert any force on "a".
- (C) each student exerts a force on the other but "b" exerts the larger force.
- (D) each student exerts a force on the other but "a" exerts the larger force.
- (E) each student exerts the same amount of force on the other.

12. A book is at rest on a table top. Which of the following force(s) is(are) acting on the book?

- 1. A downward force due to gravity.
- 2. The upward force by the table.
- 3. A net downward force due to air pressure.
- 4. A net upward force due to air pressure.

- (A) 1 only
- (B) 1 and 2
- (C) 1, 2, and 3
- (D) 1, 2, and 4
- (E) none of these, since the book is at rest there are no forces acting on it.

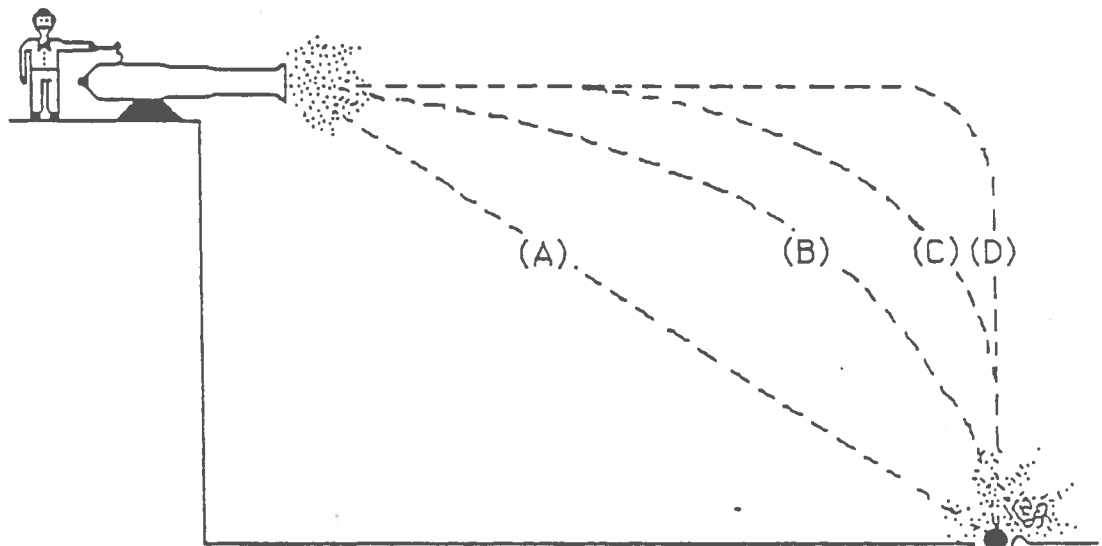
- \* Refer to the following statement and diagram while answering the next two questions.



A large truck breaks down out on the road and receives a push back into town by a small compact car.

13. While the car, still pushing the truck, is speeding up to get up to cruising speed;
- (A) the force of the car pushing against the truck is equal in amount to that of the truck pushing back against the car.
  - (B) the force of the car pushing against the truck is less than that of the truck pushing back against the car.
  - (C) the force of the car pushing against the truck is greater than that of the truck pushing back against the car.
  - (D) the car's engine is running so it applies a force as it pushes against the truck but the truck's engine isn't running so it can't push back with a force against the car.
  - (E) neither the car nor the truck exert any force on the other, the truck is pushed forward simply because it is in the way of the car.
14. After the person in the car, while pushing the truck, reaches the cruising speed at which he/she wishes to continue to travel at a constant speed;
- (A) the amount of force of the car pushing against the truck is equal to that of the truck pushing back against the car.
  - (B) the amount of force of the car pushing against the truck is less than that of the truck pushing back against the car.
  - (C) the amount of force of the car pushing against the truck is greater than that of the truck pushing against the car.
  - (D) the car's engine is running so it applies a force as it pushes against the truck but the truck's engine is not running so it can't push back against the car, the truck is pushed forward simply because it is in the way of the car.
  - (E) neither the car nor the truck exert any force on the other, the truck is pushed forward simply because it is in the way of the car.

15. When a rubber ball dropped from rest bounces off the floor, its direction of motion is reversed because;
- (A) energy of the ball is conserved.
  - (B) momentum of the ball is conserved.
  - (C) the floor exerts a force on the ball that stops its fall and then drives it upward.
  - (D) the floor is in the way and the ball has to keep moving.
  - (E) none of the above.
16. Which of the paths in the diagram below best represents the path of the cannon ball?

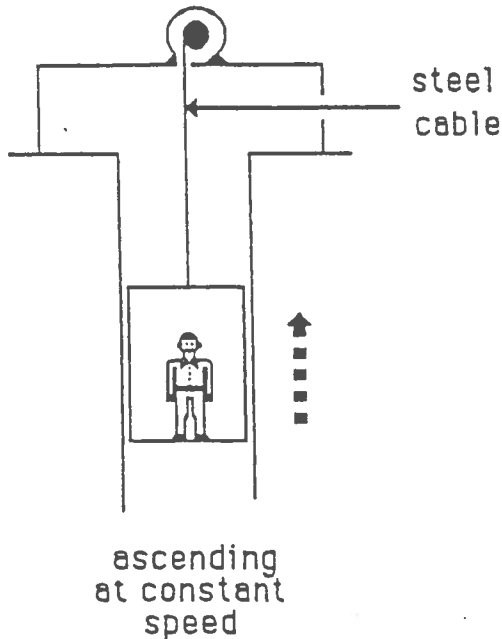


17. A stone falling from the roof of a single story building to the surface of the earth;
- (A) reaches its maximum speed quite soon after release and then falls at a constant speed thereafter.
  - (B) speeds up as it falls, primarily because the closer the stone gets to the earth, the stronger the gravitational attraction.
  - (C) speeds up because of the constant gravitational force acting on it.
  - (D) falls because of the intrinsic tendency of all objects to fall toward the earth.
  - (E) falls because of a combination of the force of gravity and the air pressure pushing it downward.



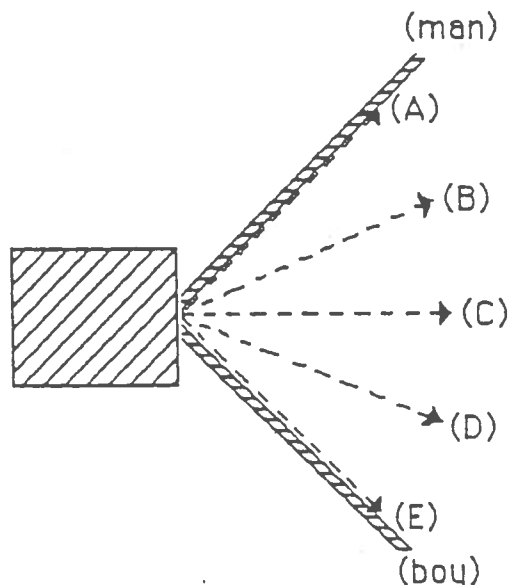
- \* When responding to the following question, assume that any frictional forces due to air resistance are so small that they can be ignored.

18. An elevator, as illustrated, is being lifted up an elevator shaft by a steel cable. When the elevator is moving up the shaft at a constant velocity:

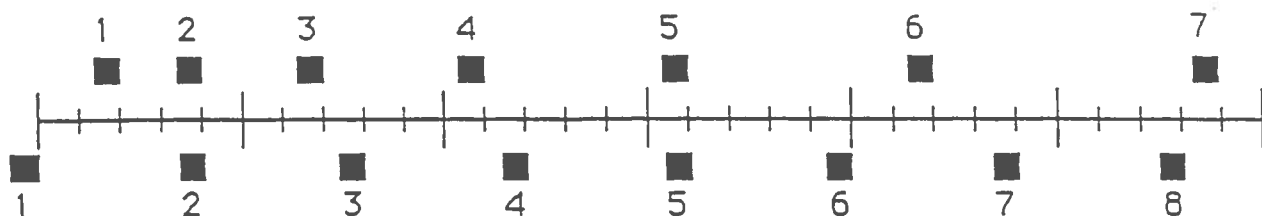


- (A) the upward force on the elevator by the cable is greater than the downward force of gravity.
- (B) the amount of upward force on the elevator by the cable is equal to that of the downward force of gravity
- (C) the upward force on the elevator by the cable is less than the downward force of gravity.
- (D) it goes up because the cable is being shortened, not because of the force being exerted on the elevator by the cable.
- (E) the upward force on the elevator by the cable is greater than the downward force due to the combined effects of air pressure and the force of gravity.

19. Two people, a large man and a boy, are pulling as hard as they can on two ropes attached to a crate, as illustrated in the diagram below. Which of the indicated paths (A-E) would most likely correspond to the path of the crate as they pull it along?

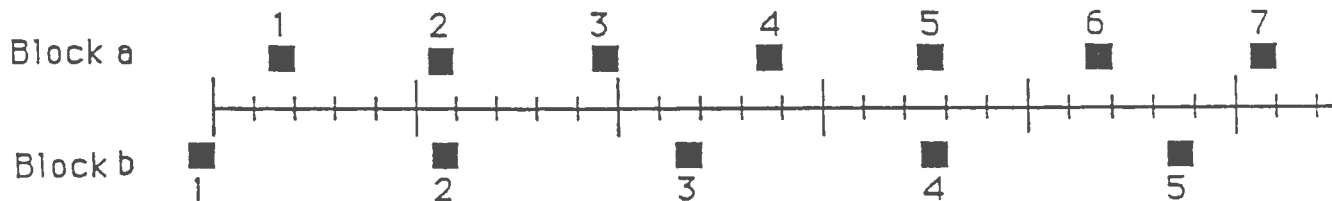


- \* The positions of two blocks at successive 0.20 second time intervals are represented by the numbered squares in the diagram below. The blocks are moving toward the right.



20. Do the blocks ever have the same speed?

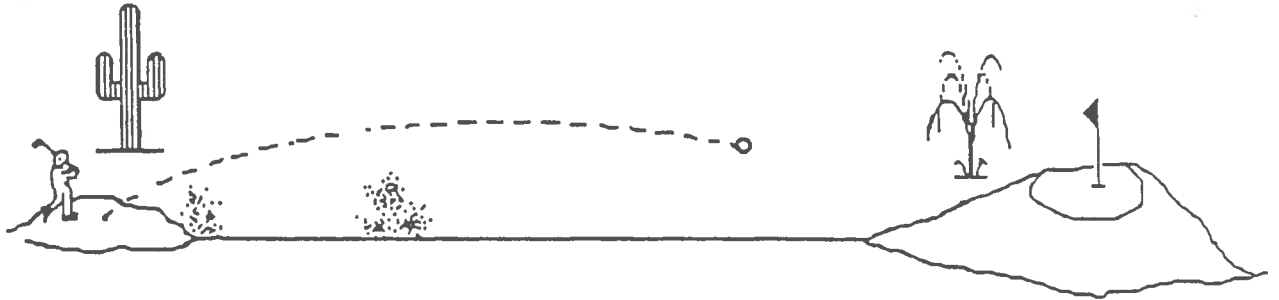
- (A) No.
  - (B) Yes, at instant 2.
  - (C) Yes, at instant 5.
  - (D) Yes, at instant 2 and 5.
  - (E) Yes, at some time during interval 3 to 4.
- \* The positions of two blocks at successive equal time intervals are represented by numbered squares in the diagram below. The blocks are moving toward the right.



21. The acceleration of the blocks are related as follows:

- (A) acceleration of "a" > acceleration of "b"
- (B) acceleration of "a" = acceleration of "b" > 0
- (C) acceleration of "b" > acceleration of "a"
- (D) acceleration of "a" = acceleration of "b" = 0
- (E) not enough information to answer.

22. After being hit, a golf ball driven down a fairway is observed to travel through the air with a trajectory (flight path) similar to that in the depiction below.



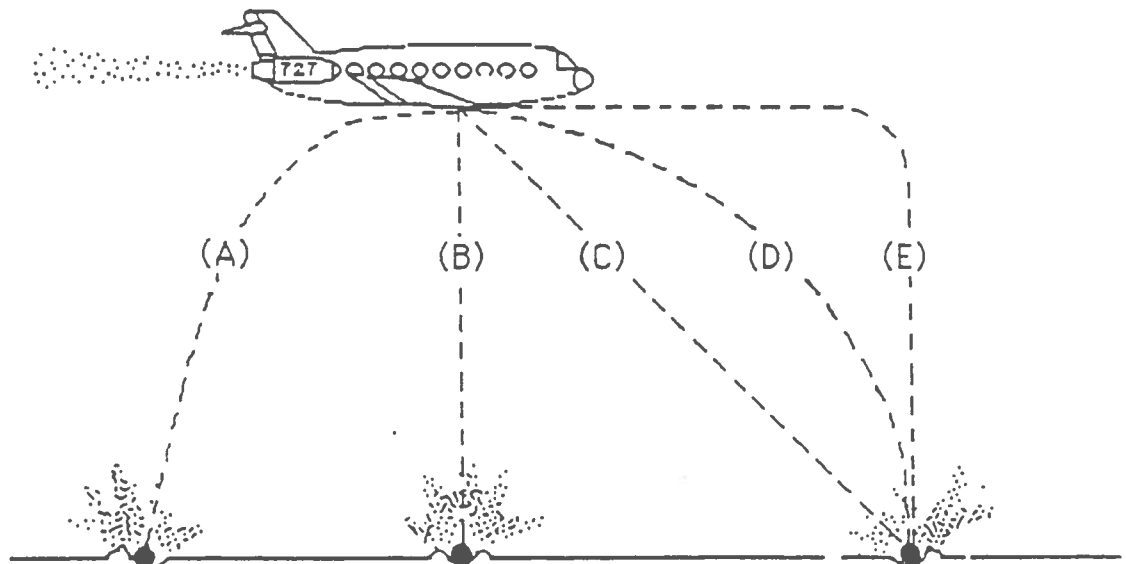
Which following force(s) is(are) acting on the golf ball during its entire flight?

1. the force of gravity
2. the force of the "hit"
3. the force of air resistance

- (A) 1 only  
(B) 1 and 2  
(C) 1, 2, and 3

- (D) 1 and 3  
(E) 2 and 3

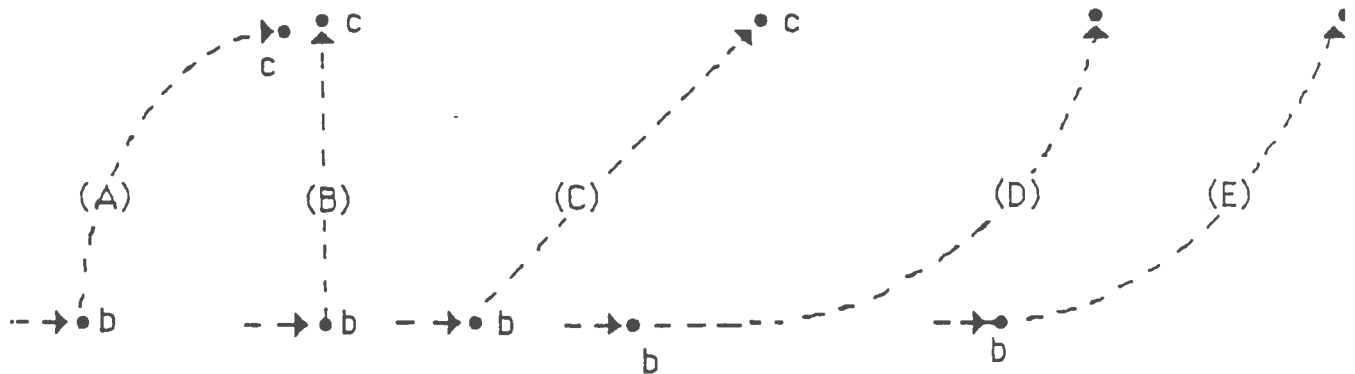
23. A bowling ball accidentally falls out of the cargo bay of an airliner as it flies along in a horizontal direction. As seen from the ground, which path below would the bowling ball most closely follow after leaving the airplane?



- \* When answering the next four questions, refer to the following statement and diagram.
- \* A rocket, drifting sideways in outer space from position "a" to position "b". is subject to no outside forces. At "b", the rocket's engine starts to produce a constant thrust at right angles to line "ab". The engine turns off again as the rocket reaches some point "c".



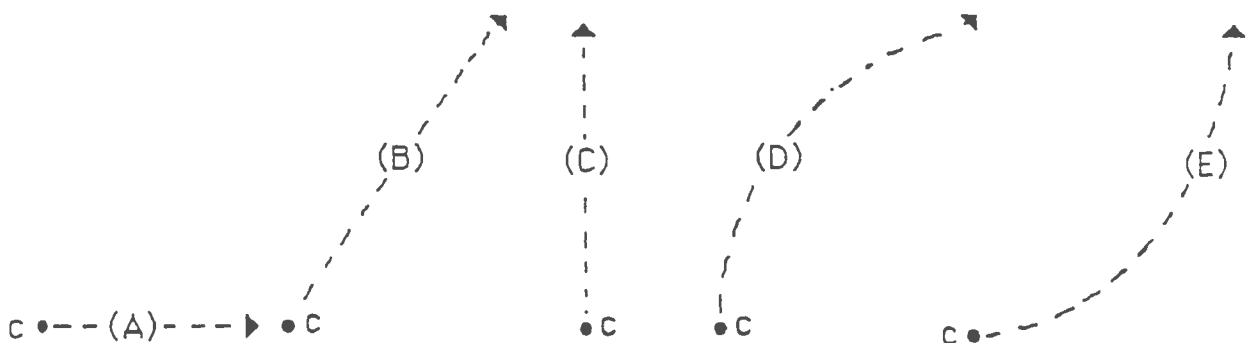
24. Which path below best represents the path of the rocket between "b" and "c"?



25. As the rocket moves from "b" to "c", its speed is;

- (A) constant.
- (B) continuously increasing.
- (C) continuously decreasing.
- (D) increasing for a while and constant thereafter.
- (E) constant for a while and decreasing thereafter.

26. At "c" the rocket's engine is turned off. Which of the paths below will the rocket follow beyond "c"?



27. Beyond "c", the speed of the rocket is;

- (A) constant.
- (B) continuously increasing.
- (C) continuously decreasing.
- (D) increasing for a while and constant thereafter.
- (E) constant for a while and decreasing thereafter.

28. A large box is being pushed across the floor at a constant speed of 4.0 m/s. What can you conclude about the forces acting on the box.

- (A) If the force applied to the box is doubled, the constant speed of the box will increase to 8.0 m/s.
- (B) The force applied to move the box at a constant speed must be more than its weight.
- (C) The force applied to move the box at a constant speed must be just equal to the external forces that resist its motion.
- (D) The force applied to move the box at a constant speed must be more than the external forces that resist its motion.
- (E) There is a force being applied to the box to make it move but the external forces such as friction are not "real" forces they just resist motion.

29. If the force being applied to the box in the preceding problem is suddenly discontinued, the box will;

- (A) stop immediately.
- (B) continue at a constant speed for a very short period of time and then slow to a stop.
- (C) immediately start slowing to a stop.
- (D) continue at a constant velocity.
- (E) increase its speed for a very short period of time, then start slowing to a stop.

# Bio 2110 - Appendix One

Cell/Molecular  
Biology

## General Biology 201L (2110L) - Lab on Mitosis

1) Examine a slide of whitefish blastula. What is a blastula? \_\_\_\_\_

\_\_\_\_\_

Draw a cell in Metaphase and another in Anaphase. Label the chromosomes, spindle fibers, aster rays, centrosomes and the other structures you see..

2) Look at a slide of an onion (*Allium*) root tip. Draw the five stages of the cell cycle.

3) The purpose of the last part of this laboratory is to determine the length of each stage of the cell cycle in actively dividing cells. Assume that the total length of the cell cycle in *Allium* (onion) root tip cells is 40 hours.

Count three fields of view, recording how many cells you find in each stage. Be sure to select parts of the root tip where lots of cells are undergoing mitosis. Your lab partner can record while you observe and then vice versa. Use the mitosis posters to help you identify the stages.

Record the total number of cells you counted. This is usually between 400 and 1000 cells.

Publish your results (total cells counted and number of cells in each stage) on the blackboard.

Calculate the % cells in interphase, prophase, metaphase, anaphase and telophase using just your data. How long was each stage?

Use the compiled class data to calculate the % of cells in each stage and the length of each stage.

Compare your results with the compiled data. Were there significant differences? What were they?

Why was there so much variation in results between the different groups of counters?

How do the class results compare to the literature's results regarding the length of the stages of the cell cycle.

Hand in your report in two weeks.

## Practice Final MATH 145 Spring 2019

1. A study is performed to determine the influence of exercise on sleep. 40 subjects are randomly selected from a freshman class of 400 students. One week, the 40 subjects refrain from exercising and record the number of hours they sleep. The following week, the same 40 subjects are asked to exercise for a half-hour and record the number of hours they sleep. The third week, the 40 subjects are asked to exercise for one hour and record the number of hours of sleep. The mean number hours of sleep for the first, second and third week were 7 hours, 6.5 hours and 8 hours. Define:
  - a. Dependent variable: Hours of sleep
  - b. Independent variable: Amount of exercise
  - c. Sample: 40 subjects selected from freshman class
  - d. Population: 400 students in freshman class
- 2A. Suppose the GPAs of a random sample of students are {1.5, 1.9, 2.0, 2.0, 2.5, 2.8, 3.0, 3.2, 3.8}. Find the mean, median, mode, and range. Construct a frequency distribution and relative frequency distribution with these scores.

Sum of all scores: 22.7

Mean:  $22.7/9 = 2.52$

Median: Middle number when ordered from least to largest = 2.5

Mode: Most frequent number = 2.0

Range: Maximum value – Minimum value =  $3.8 - 1.5 = 2.3$

### Frequency distribution

Interval width =  $\text{Range}/(\text{Number of intervals}) = 2.3/3 = .767$

To build the first interval, start by adding the interval width (.767) to the minimum value. For subsequent intervals, continue adding .767 to the previous interval.

Interval 1: [1.5, 2.267], Interval 2: [2.268, 3.035], Interval 3: [3.036, 3.8]

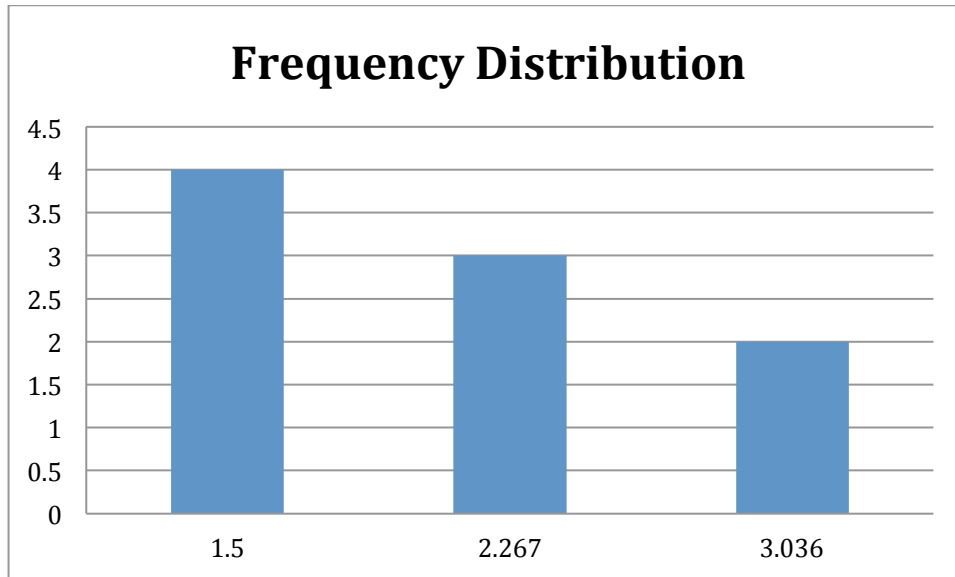
Count the number of scores in each interval.



Interval 1: 4 scores {1.5,1.9,2.0,2.0}, Interval 2: 3 scores {2.5,2.8,3.0},

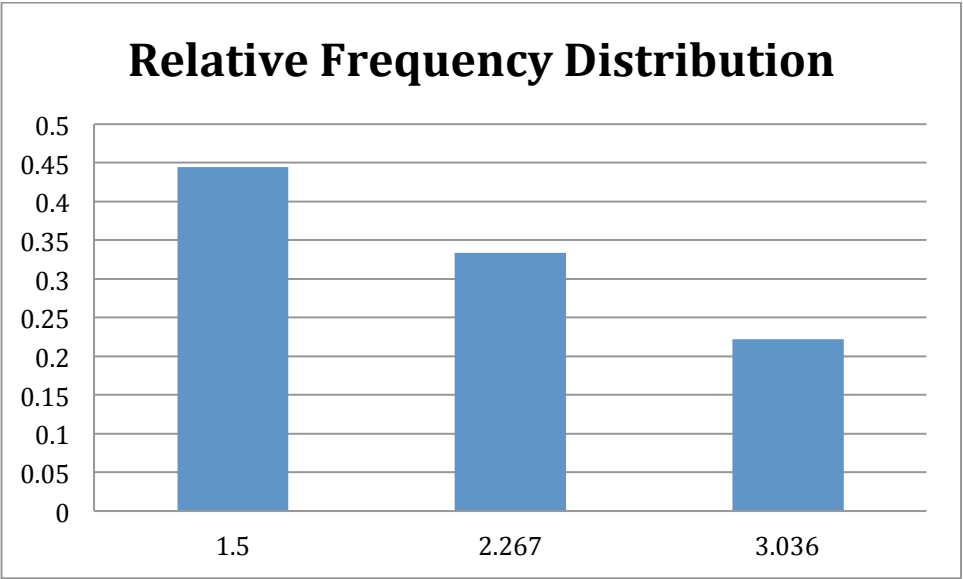
Interval 3: 2 scores {3.2, 3.8}

Construct a histogram with these values.



For the relative frequency distribution, divide the scores in each interval by the total number of scores (9) and plot the values.

Interval 1:  $4/9 = .44$ , Interval 2:  $3/9 = .33$ , Interval 3:  $2/9 = .22$



2B. Find the standard deviation and variance  $s^2$  of these scores  $\{-2,0,1,2\}$

Standard deviation calculation

$$s = \sqrt{\frac{SS}{N-1}}, \quad SS = \sum X_i^2 - \frac{(\sum X_i)^2}{N}$$

$X_i$	$X_i^2$
-2	4
0	0
1	1
2	4
$\sum X_i = 1$	$\sum X_i^2 = 9$

$$SS = 9 - \frac{1^2}{4} = 9 - \frac{1}{4} = 9 - .25 = 8.75$$

$$s = \sqrt{\frac{8.75}{3}} = \sqrt{2.917} = 1.71$$

$$\text{Variance} = s^2 = 2.92$$

3. A frequency distribution of male heights closely resembles a normal curve with a mean of 70 inches and a standard deviation of 3 inches.

- a. If a person is 6 feet tall, what percentage of the population is taller than him? What percentage of the population is he taller than?

$$z = (72-70)/3 = .67. \text{ Area under column C} = .2514 .$$

$$\text{Percentage that is taller than him} = 25.14\%.$$

$$\text{Percentage that he is taller than} = 100\% - 25.14\% = 74.86\%$$

- b. If a person is 5 foot 5 inches tall, what percentage of the population is shorter than him? What percentage of the population is taller than him?

$$5 \text{ feet } 5 \text{ inches} = 65 \text{ inches}, \quad z = (65 - 70)/3 = -1.67.$$

$$\text{Looking under Column C with } z = 1.67, \text{ area} = .0475.$$

$$\text{Percentage that is shorter than him} = 4.75\%$$

$$\text{Percentage that is taller than him} = 100\% - 4.75\% = 95.25\%$$

- c. Suppose an individual is taller than 70% of the population. What is the height of the individual?

Find the z-value such that the area under column C is .3. Why? The fraction of the population taller than him is .3.

The closest z-value is .52 which corresponds to a column C area of .3015.

Solving  $(X-70)/3 = .52$ , one finds  $X = 71.56$  inches.

- d. Suppose a person is taller than 20% of the population, or equivalently 80% of the population is taller than him. What is the height of the person?

Find the z-value such that the area under column C is .2. The closest z-value is  $z = .84$  corresponding to an area of .2005. Since the curve is symmetric, the area below  $z = -.84$  will be .2005.

Solving  $(X - 70)/3 = -.84$ , one finds  $X = 67.48$  inches.

4. Consider the following data which pairs minutes of exercise with the number of hours of sleep. Compute the Pearson R coefficient using the data. Interpret the R coefficient. In narrative form, state if you believe the relationship between the variables is positive or negative, strong or weak. Interpret the r coefficient. What would  $r = .9$  mean? What would  $r = 0.01$  mean? What would  $r = -.9$  mean?

Minutes of Exercise	Hours of Sleep
20	7
30	6.3
40	8.5
50	9.0
60	8.0
70	8.7

X	Y	$X^2$	$Y^2$	XY
20	7	400	49	140
30	6.3	900	39.69	189
40	8.5	1600	72.25	340
50	9	2500	81	450
60	8	3600	64	480
70	8.7	4900	75.69	609
Sum X	Sum Y	Sum $X^2$	Sum $Y^2$	Sum XY
270	47.5	13900	381.63	2208

$$\sum X = 270, \sum Y = 47.5, \sum X^2 = 13900, \sum Y^2 = 381.63, \sum XY = 2208$$

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{\left(\sum X^2 - \frac{(\sum X)^2}{N}\right)\left(\sum Y^2 - \frac{(\sum Y)^2}{N}\right)}} = \frac{2208 - \frac{270 * 47.5}{6}}{\sqrt{\left(13900 - \frac{270^2}{6}\right)\left(381.63 - \frac{47.5^2}{6}\right)}} = .713$$

5. Consider the table of values in Problem Compute the linear regression line using the same data, clearly stating the steps you used to find the slope and y-intercept of the line. Plot the original data along with the linear regression line. Do you think the line is a good representation of the data? The linear regression line is considered to be the line that “best fits” the data but what exactly does the linear regression line try to minimize? Using the linear regression line, predict the hours of sleep if a person exercised for 45 minutes. Does your prediction seem reasonable? Use the coefficient of determination to support your line of reasoning.

a. Compute the regression line for Y.

$$m = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sum X^2 - \frac{(\sum X)^2}{N}} \quad b = \bar{Y} - m\bar{X}$$

$$m = \frac{2208 - \frac{(270)(47.5)}{6}}{13,900 - \frac{270^2}{6}} \approx .04, \quad \bar{X} = \frac{\sum X}{N} = \frac{270}{6} = 45, \quad \bar{Y} = \frac{\sum Y}{N} = \frac{47.5}{6} \approx 7.92$$

$$b = 7.92 - (.04)(45) \approx 6.12$$

Equation of regression line:  $y = mx + b$ ,  $y = .04x + 6.12$ . The linear regression line minimizes the sum of squares between the predicted y-values of the line and the y-coordinates of the original data.

b. Using the regression line computed in part a, predict the number of hours of sleep if a person exercised 45 minutes.

$$\text{When } x = 45, y = (.04)(45) + 6.12 = 7.92 \text{ hours}$$

6. Team A has a 70% chance of winning and Team B has a 60% chance of winning.

a) What is the probability that both Team A and Team B win? Both events are independent which means that the results of one game do not affect the other game.

$$p(A \text{ and } B) = p(A) * p(B) = .70 * .60 = .42$$

b) What is the probability that Team A **OR** Team B wins? Note: Both events are **NOT** mutually exclusive which means both events can occur simultaneously. Use your result from part a.

$$p(A \text{ or } B) = p(A) + p(B) - p(A \text{ and } B) = .70 + .60 - .42 = .88$$

7. A bag is filled with 4 red marbles, 2 green marbles, and 5 blue marbles? Three marbles are drawn from the bag. Compute the final answer in decimal form.

a) What is the probability of drawing a green marble, a red marble and a blue marble in that order **with** replacement?

$$\text{Probability} = \left( \frac{2}{11} \right) \left( \frac{4}{11} \right) \left( \frac{5}{11} \right) = .03$$

b) What is the probability of drawing a green marble, a blue marble and a blue marble in that order **WITHOUT** replacement?

$$\text{Probability} = \left( \frac{2}{11} \right) \left( \frac{5}{10} \right) \left( \frac{4}{9} \right) = .0404$$

8. A fair coin is tossed 9 times. What is the probability that 6 heads are tossed?

$${}_9C_6 p^6 q^{9-6} \quad p = .5, q = .5 \quad {}_9C_6 = \frac{9!}{(9-6)!6!} = 84$$

$$\text{Probability} = 84*(.5)^9 = .164$$

One can also use the binomial distribution Table B at the back of the book. Locate N = 9; Locate No. of P or Q Events 6; Consult the probability underneath the .50 column since there is a .50 chance of getting a heads on a single toss. Probability = .1641

9. In a multiple choice exam, there are 8 questions and each question has four answers. What is the probability of getting 7 or more answers correct?

$${}_8C_7 p^7 q^{8-7} + {}_8C_8 p^8 q^{8-8} = 8(.25^7)(.75^1) + 1(.25^8)(.75^0) = .000366 + .0000153 = .00038$$

$$p = .25, q = .75$$

$${}_8C_7 = \frac{8!}{(8-7)!6!} = 8$$

$${}_8C_8 = \frac{8!}{(8-8)!8!} = 1$$

$$\text{Probability} = .00038 \text{ or } .038\%$$

One can also use the binomial distribution Table B at the back of the book. Locate N = 8; Locate No. of P or Q Events 7; Consult the probability underneath the .25 column since there is a 1 out of 4 or .25 chance of getting a question correct. Probability = .0004. Locate N = 8; Locate No. of P or Q Events 8; Consult the probability underneath the .25 column since there is a 1 out of 4 or .25 chance of getting a question correct. Probability = .0000. Add the two probabilities .0004 and .0000 to get the final probability = .0004 or .04%.

10. Suppose that the incidence of certain disease in the US population is 5%. Among 2000 citizens from a town, 110 of the citizens have the disease. What is the probability of this



occurring by chance? Use the normal approximation after verifying that it is applicable.

$$n = 2000$$

$$p = .05$$

$$q = 1 - p = .95$$

$$np = 2000(.05) = 100 \geq 10$$

$$nq = 2000(.95) = 1900 \geq 10$$

$$\mu = np = 100$$

$$\sigma = \sqrt{npq} = \sqrt{2000 * .05 * .95} = \sqrt{95} = 9.7468$$

$$z = \frac{X - \mu}{\sigma} = \frac{110 - 100}{9.7468} = 1.026 \approx 1.03$$

$$\text{Area C} = .1515$$

$$\text{Probability} = .1515 \text{ or } 15.15\%$$

11. A study is performed to determine the effects of exercise on sleep. The directional hypothesis is that exercise increases the number of hours slept by an individual. Consider the table below which shows the amount of sleep individuals received with and without exercise.

a) What are the alternative and null hypothesis?

$H_1$ : Exercise increases sleep.

$H_0$ : Exercise does not increase the number of hours slept.

b) What is the probability that the results are due purely to chance? Use the **sign test** to compute the probability.

In 8 out of 9 individuals, exercise increased the number of hours slept.

$$p = {}_9C_8 p^8 q^{9-8} + {}_9C_9 p^9 q^{9-9} = 9(.5^8)(.5^1) + 1(.5^9)(.5^0) = (9 + 1)(.5^9) = 10(.5^9) = .0195 \approx .02$$

$$p = .5, q = .5$$

$${}_9C_8 = \frac{9!}{(9-8)!8!} = 9$$

$${}_9C_9 = \frac{9!}{(9-9)!9!} = 1$$

One can also use the binomial distribution Table B at the back of the book. Locate  $N = 9$ ; Locate No. of P or Q Events 8; Consult the probability underneath the .5 column since the null hypothesis assumes there is an equal chance of getting a + or a -. Probability = .0176. Locate  $N = 9$ ; Locate No. of P or Q Events 9; Consult the probability underneath the .5 column since we assume there is an equal chance of getting a + or a -. Probability = .0020. Add the two probabilities .0176 and .0020 to get the final probability = .0196 or approximately .02.

c) Assuming alpha (1 tail) = .05, will the company reject or retain the null hypothesis?

$$p = .02 \leq \alpha = .05 \quad \text{Reject } H_0, \text{ Retain } H_1$$

d) What type of error could be made in this study?

Type I error

Without exercise	6	7	5	6	8	9	7	6	8
With	7	8	6	7	6	10	8	7	9

exercise									
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12. A researcher believes that participation in preschool programs increases the test scores of children on a standardized exam in third grade. She determines that the average test score of 50 children who participated in preschool programs is 108 in third grade, while the average test score of children with no preschool in the school district is 107 in third grade with a standard deviation of 7. Using an alpha level (one-tail) of .05 and the **z-test**, determine if the researcher will reject or retain her hypothesis. Clearly state the alternative and null hypothesis.

$H_1$ : Preschool programs improve test scores in third grade

$H_0$ : Preschool programs do not improve test scores in third grade

$$\sigma_N = \frac{\sigma}{\sqrt{N}} = \frac{7}{\sqrt{50}} \approx .99, \quad z = \frac{\bar{X} - \mu}{\sigma_N} = \frac{108 - 107}{.99} \approx 1.01, \quad z_{crit} = 1.65, \quad |z| = 1.01 < z_{crit} = 1.65$$

Retain  $H_0$ , Reject  $H_1$

13. Suppose that a citizen's group claims that reducing the speed limit on interstates will reduce accident deaths. Twenty randomly stretches of interstate are selected where a speed limit of 65 mph is enforced. It is found that the average number of accident deaths per year on these stretches is 32 with a standard deviation of 5. The mean number of accident deaths on the interstate with a speed limit of 75 mph is 35. Using the **t-test**, can the citizen's group reject or retain the null hypothesis, which assumes the difference is due to chance? Use an alpha level (one-tail) of .05. Clearly state the alternative and null hypothesis.

$H_1$ : An enforced speed limit of 65 mph reduces accident deaths

$H_0$ : An enforced speed limit of 65 mph does not reduce accident deaths

$$s = 5, \quad s_{\bar{X}} = \frac{s}{\sqrt{N}} = \frac{5}{\sqrt{20}} = 1.12, \quad t = \frac{\bar{X} - \mu}{s_{\bar{X}}} = \frac{32 - 35}{1.12} = -2.68,$$

$$df = N - 1 = 19, \quad \alpha_{1, \text{tail}} = .05, \quad t_{crit} = 1.729$$

$$|t| = 2.68 \geq t_{crit} = 1.729$$

Reject  $H_0$ , Retain  $H_1$

14. Suppose a company claims its prenatal vitamin will change the birth weight of newborns. The following table shows the birth weights of newborns (in pounds) collected from 8 mothers who took the vitamin. The average birth weight from the population is 7.7 pounds. Using the **t-test**, determine if the company can reject the null hypothesis, which assumes the results are due to chance. Use an alpha level (two-tail) of .05. Clearly state the alternative and null hypothesis.

$H_1$ : Taking the prenatal vitamin will change the birth weight of newborns

$H_0$ : Taking the prenatal vitamin will not change the birth weight of newborns

Birth weights (pounds)	7.5	10.0	9.1	8.2	6.5	7.8	7.4	8.3

	X	X <sup>2</sup>
	7.5	56.25
	10	100
	9.1	82.81
	8.2	67.24
	6.5	42.25
	7.8	60.84
	7.4	54.76
	8.3	68.89
SUM X	64.8	
Sum X <sup>2</sup>		533.04
SS		8.16

s

1.079682493

$$s = \sqrt{\frac{SS}{N-1}}, \quad SS = \sum X_i^2 - \frac{(\sum X_i)^2}{N}$$

$$s = 1.08, \quad \bar{X} = \frac{\sum X_i}{N} = \frac{64.8}{8} = 8.1, \quad s_{\bar{X}} = \frac{s}{\sqrt{N}} = \frac{1.08}{\sqrt{8}} = .38, \quad t = \frac{\bar{X} - \mu}{s_{\bar{X}}} = \frac{8.1 - 7.7}{.38} = 1.05,$$

$$df = N - 1 = 7, \quad \alpha_{2, \text{tail}} = .05, \quad t_{\text{crit}} = 2.365$$

$$|t| = 1.05 < t_{\text{crit}} = 2.365$$

Retain  $H_0$ , Reject  $H_1$

15. A researcher wishes to know the average amount of time studied by students at a college each week. Instead of surveying every student in the college, the researcher surveys 30 students. She finds a mean of 12 hours and a standard deviation of 2 hours. Construct a 95% and a 99% confidence interval using the critical t value.

$$s = 2, \quad s_{\bar{X}} = \frac{s}{\sqrt{N}} = \frac{2}{\sqrt{30}} = .365, \quad df = 29, \quad t_{\text{crit}} = 2.045 \text{ (95\%)}, \quad t_{\text{crit}} = 2.756 \text{ (99\%)}$$

In identifying the critical t-values, an alpha of .025 1-tail was used for the 95% confidence interval and an alpha of .005 1-tail was used for the 99% confidence interval.

For 95% confidence interval,

$$\mu_{\text{upper}} = \bar{X} + s_{\bar{X}} t_{\text{crit}} = 12 + .365(2.045) = 12.746, \quad \mu_{\text{lower}} = \bar{X} - s_{\bar{X}} t_{\text{crit}} = 12 - .365(2.045) = 11.25$$

For the 99% confidence interval,

$$\mu_{\text{upper}} = \bar{X} + s_{\bar{X}} t_{\text{crit}} = 12 + .365(2.756) = 13.0, \quad \mu_{\text{lower}} = \bar{X} - s_{\bar{X}} t_{\text{crit}} = 12 - .365(2.756) \approx 11$$

The mean of the population has a 95% and a 99% confidence interval of

$$\mu_{\text{lower}} \leq \mu \leq \mu_{\text{upper}}.$$

16. A researcher compares the gas mileage of two different brands of gasoline in 10 cars. The following results were obtained.

Brand 1	16	17	15	14	20	23	19	17	20	21
Brand 2	15	17	14	14	18	20	20	15	19	18

Use the independent groups t-test and the correlated groups t-test to determine if there is a difference in the gas mileage for the two brands. State a nondirectional alternative and null hypothesis. Use an alpha level of .05.

H1: There is a difference in gas mileage between the brands.

H<sub>0</sub>: There is no difference in gas mileage between the brands.

	X <sub>1</sub>	X <sub>2</sub>	X <sub>1</sub> <sup>2</sup>	X <sub>2</sub> <sup>2</sup>
	16	15	256	225
	17	17	289	289
	15	14	225	196
	14	14	196	196
	20	18	400	324
	23	20	529	400
	19	20	361	400
	17	15	289	225
	20	19	400	361
	21	18	441	324
SUM X <sub>1</sub>	182			
SUM X <sub>2</sub>		170		
SUM X <sub>1</sub> <sup>2</sup>			3386	
SUM X <sub>2</sub> <sup>2</sup>				2940
SS <sub>1</sub>		73.6		
SS <sub>2</sub>				50
X1bar	18.2			

X2bar

17

### Independent groups

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{SS_1 + SS_2}{n_1 + n_2 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}, \quad df = n_1 + n_2 - 2$$

$$t = \frac{18.2 - 17}{\sqrt{\left(\frac{73.6 + 50}{10 + 10 - 2}\right)\left(\frac{1}{10} + \frac{1}{10}\right)}} = \frac{1.2}{\sqrt{\left(\frac{123.6}{18}\right)\left(\frac{2}{10}\right)}} = \frac{1.2}{\sqrt{(6.867)(.2)}} = \frac{1.2}{\sqrt{1.373}} = \frac{1.2}{1.172} = 1.02 \quad df = 10 + 10 - 2 = 18$$

$$t_{crit} = 2.101$$

$$|t| < t_{crit}, \quad \text{Retain } H_0$$

### Correlated groups

	X1	X2	D	D <sup>2</sup>
	16	15	1	1
	17	17	0	0
	15	14	1	1
	14	14	0	0
	20	18	2	4
	23	20	3	9
	19	20	-1	1
	17	15	2	4
	20	19	1	1
	21	18	3	9
SUM D			12	
SUM D <sup>2</sup>				30
SSD				15.6
SD				1.316561177
Dbar			1.2	

$$t = \frac{\bar{D}}{\left(\frac{s_D}{\sqrt{N}}\right)}, \quad s_D = \sqrt{\frac{SS_D}{N-1}}, \quad SS_D = \sum D_i^2 - \frac{(\sum D_i)^2}{N}$$

$$t = \frac{1.2}{(1.316 / \sqrt{10})} = \frac{1.2}{.416} = 2.88 \quad df = N - 1 = 9, \quad t_{crit} = 2.262$$

$$|t| \geq t_{crit}, \quad \text{Reject } H_0$$

## Formulas

*These formulas will be provided to you on the midterm and the final along with any needed tables.*

### Standard deviation and variance

$$s = \sqrt{\frac{SS}{N-1}}, \quad SS = \sum X_i^2 - \frac{(\sum X_i)^2}{N}$$

$$\text{Variance} = s^2$$

### z-value

$$z = \frac{X - \mu}{\sigma}$$

### Pearson r

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{\left(\sum X^2 - \frac{(\sum X)^2}{N}\right)\left(\sum Y^2 - \frac{(\sum Y)^2}{N}\right)}}$$



### **Regression line**

$$m = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sum X^2 - \frac{(\sum X)^2}{N}} \quad b = \bar{Y} - m\bar{X}$$

$$y = mx + b$$

### **Probability of independent events A and B**

$$p(\text{A and B}) = p(\text{A})p(\text{B})$$

### **Probability of non-mutually exclusive events**

$$p(\text{A or B}) = p(\text{A}) + p(\text{B}) - p(\text{A and B})$$

### **Binomial distribution probability**

$${}_nC_m p^m q^{n-m} \quad q = 1 - p \quad {}nC_m = \frac{n!}{(n-m)!m!}$$

### **Normal Approximation**

$$q = 1 - p$$

$$np \geq 10$$

$$nq \geq 10$$

$$\mu = np$$

$$\sigma = \sqrt{npq}$$

$$z = \frac{X - \mu}{\sigma}$$

### Sign-test

Tally up the number of pluses and minus. Compute the probability of achieving the number of pluses or any outcome more extreme using the binomial distribution.

If  $p \leq \alpha$ , Reject  $H_0$ , Retain  $H_1$

If  $p > \alpha$ , Retain  $H_0$ , Reject  $H_1$

### z-test

$$z = \frac{\bar{X} - \mu}{\sigma_{\bar{X}}}, \quad \sigma_{\bar{X}} = \frac{\sigma}{\sqrt{N}}$$

If  $|z| \geq z_{crit}$ , Reject  $H_0$ , Retain  $H_1$

If  $|z| < z_{crit}$ , Retain  $H_0$ , Reject  $H_1$

### Critical z-values

$\alpha=.05$	
1.65	1-tail
1.96	2-tail

### t-test

$$t = \frac{\bar{X} - \mu}{s_{\bar{X}}}, \quad s_{\bar{X}} = \frac{s}{\sqrt{N}} \quad s = \sqrt{\frac{SS}{N-1}}, \quad SS = \sum X_i^2 - \frac{(\sum X_i)^2}{N} \quad df = N-1$$

If  $|t| \geq t_{crit}$ , Reject  $H_0$ , Retain  $H_1$

If  $|t| < t_{crit}$ , Retain  $H_0$ , Reject  $H_1$

### Confidence Intervals

$$\mu_{lower} \leq \mu \leq \mu_{upper}$$

$$\mu_{lower} = \bar{X} - t_{crit} s_{\bar{X}}$$

$$\mu_{upper} = \bar{X} + t_{crit} s_{\bar{X}}$$

$$s_{\bar{X}} = \frac{s}{\sqrt{N}}$$

$$\alpha_{1,tail} = \frac{1 - (confidence/100)}{2}$$

### **t-test for independent groups**

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{SS_1 + SS_2}{n_1 + n_2 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}, \quad df = n_1 + n_2 - 2$$

### **t-test for correlated groups**

$$t = \frac{\bar{D}}{\left(\frac{s_D}{\sqrt{N}}\right)}, \quad s_D = \sqrt{\frac{SS_D}{N-1}}, \quad SS_D = \sum D_i^2 - \frac{(\sum D_i)^2}{N}$$

Names: \_\_\_\_\_

\_\_\_\_\_

Date: \_\_\_\_\_

### **Diagraming the Crime Scene Lab**

**Step 1.** Work with your group to diagram your crime scene. For this part of the lab, you will need to use a clipboard, measuring tape, and the graph paper provided.

**Step 2.** Make a hand sketched diagram of the room on the graph paper. You do not need to include everything, but make sure the location of the major components of the scene and the evidence you intend to collect is identified in your diagram. You also need to create a scale and north arrow for your diagram.

**Step 3.** Pick a 'point A' near your evidence (i.e. a wall, corner). Measure from 'point A' to the evidence. Then select a 'point B' and measure from 'point B' to the evidence. Include this in your diagram.

**Distance from Point A to evidence** \_\_\_\_\_: \_\_\_\_\_

**Distance from Point B to evidence** \_\_\_\_\_: \_\_\_\_\_

**Step 4.** Fill out the evidence tag provided on the back of this worksheet.

**Step 5.** Explain what your evidence is and how it connects to the rest of the crime scene. Why is this evidence? How might it be useful in a criminal investigation?



## Clovis Community College

### Core Competencies Assessment 2019-2020—Area V: Humanities and Fine Arts

**Class: HIST 1140 World Civilization II**

**Faculty:**

**Common Core No.: HIST 1140**

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
<p><b>1. Students will analyze and critically interpret significant and primary texts and/or works of art (this includes fine art, literature, music, theatre, and film.)</b></p> <p>For all Humanities and Fine Arts Competencies, students should: Possess an understanding of the present that is informed by an awareness of past heritages in human history, arts, philosophy, religion, and literature, including the complex and interdependent relationships among cultures.</p> <p>Note: For the purposes of the Humanities and Fine Arts requirement, courses will come from the areas of History, Philosophy, Literature, Art, Dance, Music, Theatre and those offerings from other disciplines that also include, among other criteria, analytical study of primary texts and /or works of art as forms of cultural and creative expression. This requirement does not include work in areas such as studio and performance courses or courses that are primarily skills-oriented. The requirements must be fulfilled by courses from two different disciplines.</p>	<p>Students in the face to face and online sections of HIST 1140 are required to take objective midterm and final exams that contain an array of multiple-choice and essay questions that aligned with one or all of the four categories and elements that comprise the State of New Mexico core competencies for HIST. 1040 in the area of Humanities and Fine Arts. The pedagogical basis for questions focus upon course readings, written document analysis assignments, and a range of visual content elements including PowerPoint presentations and video documentaries and narratives. The thematic concentration of the material particularly focus upon ideas and traits related to social institutions, internal and external factors that influence the understanding of the</p>		

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
	present as related to an awareness of past heritages in World History, the nature and importance of belief systems in forming behavior and social mores, and how these systems are embedded in laws and social institutions – as related to the development of global society from the year 1450 to the present.		
<b>2. Students will compare art forms, modes of thought and expression, and processes across a range of historical periods and/or structures (such as political, geographic, economic, social, cultural, religious, and intellectual).</b>	See the procedural description listed above.		
<b>3. Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives.</b>	See the procedural description listed above.		



<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
4. Students will draw on historical and/or cultural perspectives to evaluate any or all of the following: contemporary problems/issues, contemporary modes of expression, and contemporary thought.	See the procedural description listed above.		

**Faculty Member Completing Assessment:**

**Date:**

**Reviewed by:**  
(Division chair)

**Date:**

*All class assessment forms are due to your division chair by June 30 or as designated by the Division Chair.  
All assessments are due from the Division Chairs to the Assessment Committee Chair by July 30.*

## I. COURSE DESCRIPTION

- a) Course number/Name – PHYS 1230
- b) Prerequisite – Algebra II, including knowledge of trigonometry
- c) General Scope of Course – Newtonian mechanics, fluids
- d) Instructor – Dr. Yang, Rm 106 McClure. Work phone NMMI X8481 email: [yang@nmmi.edu](mailto:yang@nmmi.edu)
- e) Text – Physics Giancoli 7<sup>th</sup> edition
- f) Homework-Mastering Physics. You need to purchase a pass code at the cadet store. You can buy the code with the textbook or separately. If you registered for Introduction to physics, you can still use that code for general physics. The course ID will be given to you at the first day of class. **You need to register for the course by the end of the first week.**
- g) The Lab Manual will be provided to you at the beginning of the semester.
- f) Requirements:
  - Scientific Calculator, pencil & notebook. **You are required to take notes.**
  - **NO LAPTOP OR CELLPHONE in the classroom.**
  - **Homework is assigned once a week online. Absolutely no late homework unless an acceptable reason.**
  - **The tests are accumulative tests. No test corrections. But bonus points will be assigned before the test. No test grades will be dropped at the end of the semester. But the final exam grade can replace one old test grade.**
  - Makeup lab, homework, quiz or test must be completed **in a week after the absence.**
  - **One quiz per chapter.** Quiz dates are not posted on the weekly schedule.
  - **No change in final exam schedule due to the air ticket, car pool or other reasons.**
  - **Every Monday and Wednesday night is the physics night at Wilson Hall. Dr. Tang and Dr. Yang will be there for the semester.**

## II. COURSE OBJECTIVES

- A. **Substantive Objectives:** At the conclusion of this course, you will be able to
  1. Demonstrate an understanding of the physical principles, such as Newtonian laws of mechanics, Newton's theory of gravitation, and fluid dynamics.
  2. Know the symbol for the physical quantities covered, and know the physical quantity for which each symbol stands;
  3. Demonstrate an improved insight into the mechanical phenomena of the physical world, and have the knowledge of the technical terms used in the discussion of the phenomena studied.
  4. Recognize the role that mechanics plays in many facts of our life and the responsibility of those who understand physics to contribute appropriately to their communities;

5. Using the scientific method to conduct an experiment with modern laboratory equipment.
- B. **Skill Objectives:** Upon completion of this course you will be able to
1. Apply principles of Newtonian mechanics to predict or calculate the translational motion of particles in one or higher dimensions using algebra.
  2. Apply the principles of Newtonian mechanics to predict or calculate the rotational motions of particles using algebra.
  3. Apply Newton's gravitational theory to circular motions and understand planetary motions or subatomic particle motions.
  4. Apply work and energy principle to understand the energy transfer and solve the problem with kinetic energy and potential energy.
  5. Apply Archimedes' and Bernoulli's principle to understand fluid dynamics based on Newtonian mechanics.
  6. Apply a systematic approach to problem-solving by
    - a) Identify knowns and unknowns and set up strategies to solve the problem.
    - b) Derive algebraic solutions using appropriate symbols for physical terms.
  7. Solve problems involving reading or constructing a graph.
  8. Applying mathematics of vectors to principles of physics, such as vector addition, dot product and cross product of vectors.
  9. Use Vernier Logger Pro units, LabQuests, computers, and/or the internet to gather, compile, and present information gathered experimentally;
  10. Use other laboratory equipment to experimentally verify mechanics concepts.
  11. Complete the laboratory report that presents experimental data in a data table and includes an analysis of the experimental results. Complete the pre and post-lab questions.

### III. TESTING AND ASSEMENT

- a) Homework will count for 10% of your course average.
- b) Labs will count 15% of your course average.
- c) Quiz will count 10% of your course average.
- d) Tests will count 40% of your course average.
- e) The final exam will be comprehensive in nature and counts as 20% of your final average.
- f) Class Participation and Behavior. This category will count 5 % towards your final average.
- g) Grades. Grades will be assigned according to the scale below:

89.5 – 100%	A	79.5 – 89.5%	B	69.5 – 79.5%	C	60.5 – 69.5%	D	<60.0%	F
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### IV. LATE POLICY

I do **NOT** accept late homework, lab reports, or extra credit except in the case of excused class absence on the day the assignment is due. **If you know that you will miss a test due to an athletic trip or for some other reason, then before the scheduled test date you must arrange with me a time to take the test. Failure to make prior**

**arrangement will result in a 0 on the test.** If a test or quiz is missed due to an excused absence, it will be made up the day you return to class. In case of an extended period of absence, you and I will confer on the makeup schedule.

#### V. HONOR POLICY

**Cheating, assisting in cheating, or employing other types of academic dishonesty to any degree and in any form automatically results in a grade of ZERO on the entire assignment or test for all parties involved. Further, a grade of F in that class for the semester may be given and the incident will be referred to the Commandant.**

# August, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13 Syllabus, Chapter 2, Sec 1: Reference Frame	14 No Lab Scheduled	15 Chapter 2, Sec 2: Average Velocity; Sec 3 : Instantaneous Velocity	16 No Lab Scheduled	17 Chapter 2, Secs 4-5, 8: Acceleration, Motion of constant acceleration, Graphic analysis	18
19	20 problem solving	21 Lab1: Experimental Error and Data Analysis	22 Chapter 2, Secs 6-7: Free Fall Motion	23 Lab1: Experimental Error and Data Analysis	24 Chapter 3, Sec 1-2: Vectors, scalars, Graphic Addition	25
26	27 Chapter 3, Secs 3-4: Addition by components	28 Lab2: Vector Addition	29 Chapter 3, Secs 5-6: Projectile Motion	30 Lab2: Vector Addition	31 Review Chapter 2-3	

# September, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 No Class	4 Test 2-3	5 Chapter 4, Secs 1-2: Force, Newton's 1-3 Law	6 Test 2-3	7 Chapter 4, Secs 3-4: Newton's 1- 3 Law	8
9	10 Chapter 4, Secs 5-6: Weight	11 Lab3: Static and kinetic friction using an incline	12 Chapter 4, Secs 7-8: Solving Problems, friction	13 Lab3: Static and kinetic friction using an incline	14 Review Chapter 4 (short class)	15
16	17 Chapter 5, Secs 1- 2: Uniform Circular Motion	18 Lab4: Uniform Circular Motion	19 Chapter 5, Secs 6-7 : Gravity, Satellite	20 Lab4: Uniform Circular Motion	21 Chapter 5, Secs 8 and Chapter 6, Secs 1-2: Work done by force	22
23	24 Review Chapter 4	25 Test 2-4	26 Chapter 6, Secs 3-4: Kinetic Energy, potential energy	27 Test 2-4	28 Chapter 6, Secs 5-7: Conservative and nonconservative force	29

# October, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 No Class	2 Lab5: Energy of a tossed ball	3 Chapter 6, Secs 8-9: law of conservation of energy	4 Lab5: Energy of a tossed ball	5 Chapter 6, Secs 8-9: law of conservation of energy	6
7	8 Chapter 7, Secs 1-2: Momentum and its conservation	9 test 2-6	10 Chapter 7, Secs 3-4: Collision	11 test 2-6	12 Chapter 7, Secs 5, 7: elastic and inelastic collision	13
14	15 Chapter 7, Sec, 6, 7: elastic and inelastic collision	16 Lab6: Momentum, energy and collisions	17 Chapter 7, Sec, 8: center of mass	18 Lab6: Momentum, energy and collisions	19 Review for Chapter 7	20
21	22 Chapter 8, Secs 1 –2: Angular motion	23 test 2-7	24 Chapter 8, Secs 3: Rolling Motion	25 test 2-7	26 Chapter 8, Secs 4: Torque	27
28	29 Chapter 8, Secs 5-6: Rotational dynamics	30 Lab7: Levers (Torque)	31 Chapter 8, Secs 7: Rotational kinetic energy			

# November, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 <b>Lab7: Levers (Torque)</b>	2 Chapter 8, Secs 8: angular momentum	3
4	5 Review on Chapter 8	6 <b>test on Chapter 2-8</b>	7 Review on Chapter 8	8 <b>test on Chapter 2-8</b>	9 Chapter 10, Secs 1-2: phase of matter, density	10
11	12 no class	13 <b>lab8: Rotational energy conservation</b>	14 Chapter 10, Secs 3-4: pressure, atm, gauge pressure	15 <b>lab8: Rotational energy conservation</b>	16 Quiz or Project preparation	17
18	19 Thanks Giving Break	20 Thanks Giving Break	21 Thanks Giving Break	22 Thanks Giving Break	23 Thanks Giving Break	24
25	26 Chapter 10, Secs 5-7: Pascal's principle, buoyancy	27 <b>lab9: Archimedes Principle</b>	28 Chapter 10, Secs 8-10: Flow rate, Bernoulli's equation	29 <b>lab9: Archimedes Principle</b>	30 Review on Chapter 10	



# December, 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 Review on Chapter 10	4 Test on Chapter 2-10	5 Review or Test on Chapter 2-10	6 Academic Retreat	7 Final Exams	8
9	10 Final Exams	11 Final Exams	12 Final Exams	13 Final Exams	14 Winter Break	15
16	17 Winter Break	18 Winter Break	19 Winter Break	20 Winter Break	21 Winter Break	22
23	24 Winter Break	25 Winter Break	26 Winter Break	27 Winter Break	28 Winter Break	29

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question. (1 points each)

- 1) Two displacement vectors have magnitudes of 5.0 m and 7.0 m, respectively. When these two vectors are added, the magnitude of the sum  
 A) is larger than 12 m.  
 B) is 2.0 m.  
 C) is 12 m.  
 D) could be as small as 2.0 m, or as large as 12 m. 1) \_\_\_\_\_
- 2) A runner runs halfway around a circular path of radius 10 m. What is the displacement of the jogger?  
 A) 20 m                                  B) 5 m                                  C) 10 m                                  D) 0 2) \_\_\_\_\_
- 3) If a ball is thrown with a velocity of 25 m/s at an angle of  $37^\circ$  above the horizontal, what is the vertical component of the velocity?  
 A) 15 m/s                                  B) 25 m/s                                  C) 19 m/s                                  D) 12 m/s 3) \_\_\_\_\_
- 4) Which one of the following is an example of a vector quantity?  
 A) velocity                                  B) mass                                  C) area                                  D) distance 4) \_\_\_\_\_
- 5) If the acceleration vector of an object is directed anti-parallel to the velocity vector,  
 A) the object is turning.  
 B) the object is moving in the negative x-direction.  
 C) the object is slowing down.  
 D) the object is speeding up. 5) \_\_\_\_\_
- 6) The slope of a velocity versus time graph gives  
 A) acceleration.                                  B) position.                                  C) velocity.                                  D) displacement. 6) \_\_\_\_\_
- 7) A bullet is fired horizontally, and at the same instant a second bullet is dropped from the same height. Ignore air resistance. Compare the times of fall of the two bullets.  
 A) The dropped bullet hits first.                                  B) They hit at the same time.  
 C) The fired bullet hits first.                                  D) cannot tell without knowing the masses 7) \_\_\_\_\_
- 8) Two objects collide and stick together. Kinetic energy  
 A) is definitely not conserved.  
 B) is conserved only if the environment is frictionless.  
 C) is conserved only if the collision is elastic.  
 D) is definitely conserved. 8) \_\_\_\_\_
- 9) Mass and weight  
 A) both measure the same thing.                                  B) are two different quantities.  
 C) are both measured in kilograms.                                  D) are exactly equal. 9) \_\_\_\_\_
- 10) Angular acceleration is expressed in units of  
 A) alphas per second squared.                                  B) meters per second squared.  
 C) arcs per second squared.                                  D) radians per second squared. 10) \_\_\_\_\_

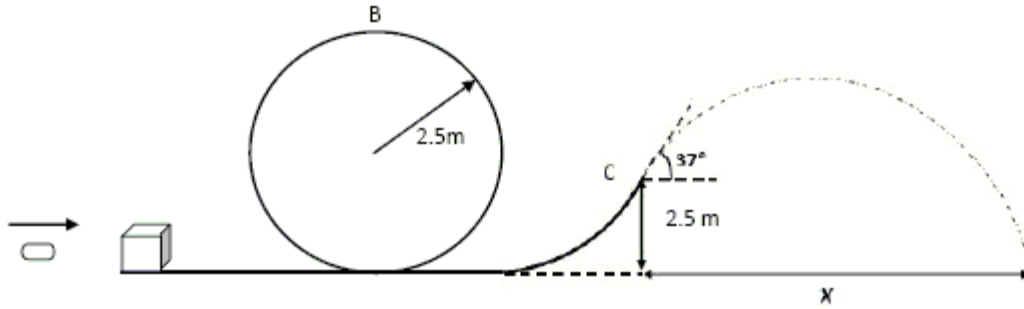
- 11) The acceleration of an object is inversely proportional to \_\_\_\_\_  
A) the net force acting on it. B) its position.  
C) its mass. D) its velocity.
- 12) A truck weighs twice as much as a car, and is moving at twice the speed of the car. Which statement is true about the truck's kinetic energy compared to that of the car? \_\_\_\_\_  
A) All that can be said is that the truck has more kinetic energy.  
B) The truck has 4 times the kinetic energy of the car.  
C) The truck has twice the kinetic energy of the car.  
D) The truck has 8 times the kinetic energy of the car.
- 13) The quantity  $mgy$  is \_\_\_\_\_  
A) the gravitational potential energy of the object.  
B) the work done on the object by the force.  
C) the kinetic energy of the object.  
D) the power supplied to the object by the force.
- 14) An ice skater performs a pirouette (a fast spin) by pulling in his outstretched arms close to his body. What happens to his moment of inertia about the axis of rotation? \_\_\_\_\_  
A) It increases.  
B) It does not change.  
C) It decreases.  
D) It changes, but it is impossible to tell which way.
- 15) As a rocket moves away from the Earth's surface, the rocket's weight \_\_\_\_\_  
A) remains the same. B) decreases.  
C) depends on how fast it is moving. D) increases.
- 16) You are standing in a moving bus, facing forward, and you suddenly fall forward as the bus comes to an immediate stop. What force caused you to fall forward? \_\_\_\_\_  
A) gravity  
B) normal force due to your contact with the floor of the bus  
C) force due to friction between you and the floor of the bus  
D) There is **not** a force leading to your fall.
- 17) A stone is thrown horizontally from the top of a tower at the same instant a ball is thrown vertically with the same velocity. Which object is traveling faster when it hits the level ground below? \_\_\_\_\_  
A) the ball  
B) It is impossible to tell from the information given.  
C) the stone  
D) Neither, since both are traveling at the same speed.
- 18) In a game of pool, the white cue ball hits the #5 ball and stops, while the #5 ball moves away with the same velocity as the cue ball had originally. The type of collision is \_\_\_\_\_  
A) inelastic.  
B) elastic.  
C) completely inelastic.  
D) any of the above, depending on the mass of the balls.

- 19) An object hits a wall and bounces back with half of its original speed. What is the ratio of the final kinetic energy to the initial kinetic energy? 19) \_\_\_\_\_  
A) 1/2                      B) 1/4                      C) 2                      D) 4
- 20) As a rock sinks deeper and deeper into water of constant density, what happens to the buoyant force on it? 20) \_\_\_\_\_  
A) It remains constant.  
B) It may increase or decrease, depending on the shape of the rock.  
C) It increases.  
D) It decreases.

**ESSAY. Write your answer in the space provided or on a separate sheet of paper.**

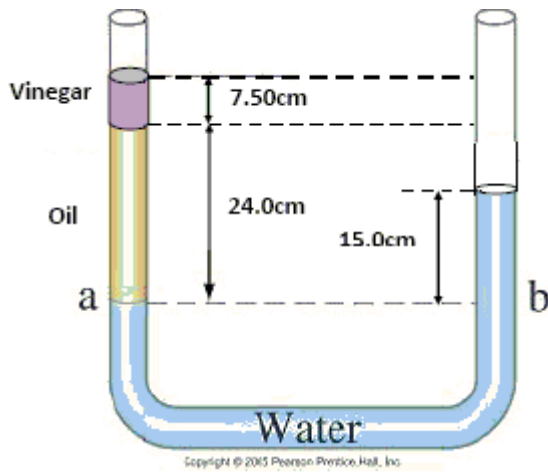
- 21) A piece of Aluminum was hanged by a spring scale when it was completely merged inside the water. The density of Aluminum is  $2.70 \times 10^3 \text{ kg/m}^3$  and the vollume is  $6.00 \times 10^{-5} \text{ m}^3$   
A) What is the free body diagram of the Aluminum when it is submerged in the water?  
B) What's the reading on the scale?  
C )If we release the Aluminum right beneath the water surface, what is the free body diagram of the Aluminum?  
D) what's the acceleration of the aluminum before it sink to the bottom?

- 22) A 10 g bullet is fired into a 0.29 kg wooden block and the system will slide up the frictionless track with a circular loop with radius of 2.5 m in the middle. If the end of the track is at 37 degree angle respect to the horizontal and 2.5 m above the ground. If the velocity of the bullet-block is 15.0 m/s after the impact,
- (A).What's the initial velocity of the bullet ?
- (B). What is the bullet-block's velocity at the end of the track (point C)?
- (C). How far from the end of the track will the bullet-block land (horizontal distance X)?



- 23) A 2.0 kg bicycle wheel with a radius of 0.30m rotates freely at constant angular speed of 25 rad/s when a 0.30 kg reflector is at a distance of 0.19 m from the axle. The moment of inertia of a wheel is  $mR^2$  (R is the radius of the wheel), the moment of inertia of a solid dot is  $mr^2$  (r is the distance from the dot to the center of rotational axis).
- (A). If the reflector on the wheel got loosen a little bit and finally slide to a distance of 0.25 m from the axle. What is the new angular speed of the wheel and the reflector?
- (B) What will be the acceleration of the wheel if someone is trying to stop the wheel in 3 revolutions after the reflector slides to 0.25 m from the axle?

- 24) Water and then oil and then vinegar (which don't mix) are poured into a U-shaped tube. Open at both ends. They come to equilibrium as shown in the following figure. If the density of the oil is  $550 \text{ kg/m}^3$ ,  
A) What is the density of the vinegar? [Hint: pressures at points a and b are equals. ]



- 25) A solid ball of mass 1.0 kg and radius 30 cm rolls up an incline with an initial velocity of 5.0 m/s without slipping. Moment of inertia of a solid ball is  $\frac{2}{5}mR^2$ .
- (A) How high can the ball reach?
- (B) If the object is a hoop with the same mass, how high can the hoop reach? Moment of inertia of a hoop is  $mR^2$
- (D) Why A and B have different answers? Which object can go the highest? Why?



## 2 VECTOR ADDITION

### 2.1 INTRODUCTION

Vectors are quantities that have both magnitude and direction. The vector we are examining in this experiment is the force. The magnitudes are measured by the weight set while the direction is measured by the angle marked on the surface of the force table. Figure 2.1 is a simple diagram of the force table.

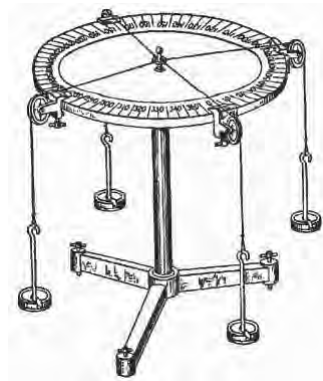


Figure 2.1: Simple Diagram of Force Table

In the first part of the experiment, the x and y components of a force vector are examined. Then in the second part of the lab an unknown force is determined by balancing it with two known forces (two weight sets).

The apparatus is very simple, yet it is very sensitive to small changes. Surprisingly accurate results can be obtained if you are patient and careful.

### 2.1.1 Vector Components

A vector can always be expressed as the sum of two or three components. In this experiment, we are going to examine two perpendicular components, x and y components. On the Force Table the vectors have two components, along the x and y axes. Figure 2.2 show the force vector  $F$  in the first quadrant of the x-y coordinate system. The vector can be resolved into its x and y components:

$$F_x = F \cdot \cos \theta \quad (2.1)$$

$$F_y = F \cdot \sin \theta \quad (2.2)$$

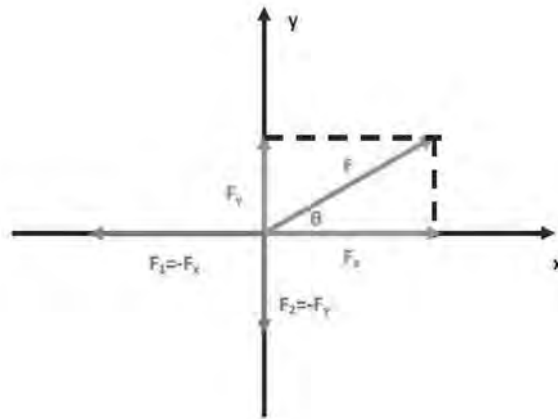


Figure 2.2: Resolving Vector  $F$

The components of a vector can be determined by knowing the magnitude of the force and its direction (angle made with respect to the positive x axis). These components can also be determined experimentally by hanging two weights along the -x and -y axes ( $F_1$  and  $F_2$  to balance them (x and y components of vector  $F$ ) as shown in Figure 2.2. The weights you hang along the axes are actually  $F_1 = -F_x$  and  $F_2 = -F_y$ . The minus sign means that they point in the opposite direction.

### 2.1.2 Vectors on the Force Table

Forces on the string are produced by the weights hanging on it. When the forces on the strings are balanced, then the vector sum of the forces must be zero. For this lab, we are using three strings. For simplicity, the magnitude is measured by the mass of the hanging weight in grams. You should know that, grams is not the unit of force. Direction is measured by the angle at which the force acts, easily read from the scale printed on the Force Table.

### 2.1.3 Balancing the Force Table

In order to get the best results the force table should be balanced. The legs of the force table have adjustable feet. Just turn the bottom of each leg to raise or lower the table. Adjust the table until the bubble in the level on the top of the table is centered. Close is good enough here. Small deviations from level will not adversely affect your results.

### 2.1.4 Centering the Forces

Slide the pulley to the desired location to balance the forces. It is very important that the strings all line up with the exact center of the table. This can be done with great accuracy if you sight down the string at the center post or sight over the center post to look down the string. Since the scale of angles marked on the Force Table has the center of the table as its origin, if the forces do not line up with the center, the scale will not measure the actual angle of the force.

### 2.1.5 Repeating the Measurements

In the first part of the experiment you determine the components of the vector  $F$  using multiple measurements. In the second part you will determine an unknown force by adjusting the angles with multiple measurements. Due to experimental uncertainties, the measurement you get for each trial will not be exactly the same. But are they in reasonable agreement? You can answer this by calculating the uncertainty due to multiple measurements. In order to get a good estimate of the uncertainty, it is important that your measurements be truly independent. This means you should completely redo the previous measurement by switching the strings, taking off all the weights, switching roles with your partner. By doing so, it can reduce the chance of a systematic error.

### 2.1.5.1 Calculating Uncertainties Introduced by Multiple Measurements: Standard Deviation of the Mean

The standard deviation is a well known, widely used, and statistically well-founded measure of error (uncertainties). For a set of  $n$  measurements  $Q_i$  whose mean value is  $\langle Q \rangle$ , the standard deviation of the mean is found from:

$$\begin{aligned}\sigma &= \sqrt{\left(\sum_{i=1}^n \frac{(Q_i - \langle Q \rangle)^2}{n \cdot (n-1)}\right)} \\ &= \sqrt{\frac{(Q_1 - \langle Q \rangle)^2}{n \cdot (n-1)} + \frac{(Q_2 - \langle Q \rangle)^2}{n \cdot (n-1)} + \frac{(Q_3 - \langle Q \rangle)^2}{n \cdot (n-1)} + \dots}\end{aligned}\quad (2.3)$$

The smaller the standard deviation (uncertainty) is, the closer these measurements are to each other. That means, the measurements are precise.

### 2.1.5.2 A Simple Example

Here is an example to calculate the uncertainty for a set of measurements for the same quantity. Here is the data table of a student who did a Basketball toss. Standing on the centerline of the room he tossed basketball onto the lab table. The goal is to toss the basketball so they all land as close to the center of the table (target) as possible. In order to find out how well (determined by the uncertainty, standard deviation) he did without practicing, every toss counts! The results are shown in the following table

Trail	1	2	3	4	5
Distance to the Target (m)	0.35	0.20	0.16	0.09	0.12

This student had an average distance  $\langle Q \rangle$  to the center of the target of

$$\langle Q \rangle = (0.35m + 0.20m + 0.16m + 0.09m + 0.12m)/5 = 0.182m \quad (2.4)$$

Since the desired distance is 0.0 m, this is also the discrepancy (accuracy in the measurement).

Since  $n = 5$ , the standard deviation can be calculated using equation 2.3:

$$\begin{aligned}
 \sigma &= \sqrt{\frac{(Q_1 - \langle Q \rangle)^2}{n \cdot (n - 1)} + \frac{(Q_2 - \langle Q \rangle)^2}{n \cdot (n - 1)} + \frac{(Q_3 - \langle Q \rangle)^2}{n \cdot (n - 1)} + \dots} \\
 &= \sqrt{\frac{(0.35 - 0.182)^2}{5 \cdot 4} + \frac{(0.20 - 0.182)^2}{5 \cdot 4} + \frac{(0.16 - 0.182)^2}{5 \cdot 4} + \frac{(0.09 - 0.182)^2}{5 \cdot 4} + \frac{(0.12 - 0.182)^2}{5 \cdot 4}} \\
 &= 0.046m \\
 &= 0.05m
 \end{aligned}
 \tag{2.5}$$

The uncertainty (standard deviation) is rounded to 1 significant figure.

Then the student's tossing result is:

$$0.182m \pm 0.05m \approx 0.18m \pm 0.05m \tag{2.6}$$

Here, the average tossing distance is rounded to 0.18 m due to the accuracy of the uncertainty (the average, or best value of the measurement should be as accurate as the uncertainty).

This student's result showed that the precision is high (uncertainty is small) while his accuracy is low (best value is not close to the target, zero).

## 2.2 MATERIALS

	Manufacturer's Serial #	Student ID
Weight Sets		
3 Weight hanger		
3 Pulleys		
Plastic Ring		
Force Table		

## 2.3 PROCEDURE

### 1. Components of a Force Vector

- (a) Hang a 250 gram weight (200g plus the 50g weight hanger) somewhere in the first quadrant (15 - 75°) of the Force Table.
- (b) Balance this with two weights hanging along the -x axis (180°),  $F_1$ , and the -y axis (270°),  $F_2$ , to determine the components  $F_x$  and  $F_y$ . Remember,  $|F_1| = |F_x|$  and  $|F_2| = |F_y|$ . This will take a little time, but be patient and you will get good results.
- (c) Repeat the measurements a few times, starting with no weights each time, until you are satisfied that you have consistent data.
- (d) Then compare your results (average of  $F_x$  and  $F_y$  together with their uncertainties) with the value of the components as determined from the trigonometric equations( Equation 2.1- 2.2). Are they in agreement?

## 2. The Unknown Force

In this part equilibrium is achieved by changing angles instead of changing weights. Both methods work, and this is a little faster. A data table with different columns is used to accommodate the new information.

- (a) Obtain an "unknown" mass from the instructor's table. Hang your unknown mass along the -x axis (180°) of the Force Table.
- (b) Hang a 200 gram weight (150g plus the 50g weight hanger) over one of the other pulleys, and 250 grams over the remaining pulley. Leave these weights fixed through the experiment. Adjust the two angles associated with these two weights until the system is in balance.
- (c) Since the unknown force  $F_{un}$  lies along the x-axis, its magnitude is the sum of the x-components of the two other weights.
- (d) Repeat the measurements a few times Again always start from scratch, revising all angles between trials to avoid systematic errors.
- (e) Average your values for  $\sum F_x$  to determine  $F_{un}$ . Estimate the absolute uncertainty of your result. Then check with your instructor for the official answer.

## 2.4 DATA SHEET

### 1. Components of a Force Vector

$F =$  \_\_\_\_\_ (g);  $\theta =$  \_\_\_\_\_

Trials	1	2	3	4	5
$F_x =  F_1 $ (g)					
$F_y =  F_2 $ (g)					

### 2. The Unknown Force

$F_1$ (g)	$F_2$ (g)

Trials	1	2	3	4	5
$\theta_1$					
$\theta_2$					

## 2.5 DATA ANALYSIS

WRITE THE DETAILED CALCULATIONS BELOW.

### 1. Components of a Force Vector

	Mean	Uncertainty (standard deviation)	Trigonometric solution
$F_x$			
$F_y$			

### 2. The Unknown Force

Trials	1	2	3	4	5
$F_{1x} = F_1 \cdot \cos(\theta_1)$					
$F_{2x} = F_2 \cdot \cos(\theta_2)$					
$\sum F_x = F_{1x} + F_{2x}$					

	Mean	uncertainty (standard deviation)
$\sum F_x = F_{1x} + F_{2x}$		



## 2.6 DISCUSSION AND CONCLUSION

Analyze the results of your measurements in relation both to the purpose(s) stated in the introduction and your understanding.

## 2.7 POST-LABORATORY QUESTIONS

1. The y-components of the unknown: You summed the x-components of the two forces to find the unknown force. Now solve the sum of the y-components. You can use the same original data as you used for the x components. Is the result what you expect?

Trials	1	2	3	4	5
$F_{1y} = F_1 \cdot \sin(\theta_1)$					
$F_{2y} = F_2 \cdot \sin(\theta_2)$					
$\sum F_y = F_{1y} + F_{2y}$					
mean of $\sum F_y$					
uncertainty of $\sum F_y$					

2. If we hang a 250 gram weight in the first quadrant ( $30^\circ$ ) of the Force Table. A 125 gram of weight was hung along the -y axis ( $270^\circ$ ). How many grams should we put on the -x ( $180^\circ$ ) to make a balance? Mathematically solve the problem.
3. If an "unknown" mass was hung along the -x axis ( $180^\circ$ ) of the Force Table. A 200 gram weight and another 100 gram weight were hung along the  $30^\circ$  and  $270^\circ$  of the force table, respectively. How much does the unknown mass weight? Mathematically solve the problem.

## 2.8 PRE-LABORATORY ASSIGNMENT

1. If a force has a magnitude  $F$  and the direction is  $\theta$  degree above the x- axis, how can you calculate the x and y components of this force?
2. For PROCEDURE 1, why can you use the weight on  $180^\circ$  and  $270^\circ$  as the x and y components of the 250 g weight?
3. For equation 2.3, what does  $\sum$  mean? What is  $Q_i$  ? What is n? What is  $\langle Q \rangle$  ?
4. If you have a set of measurements as below:

Trials	1	2	3	4
radius of a ball (cm)	1.0	1.1	0.9	1.2

What is n? What is  $x_3$  ? What is  $\langle x \rangle$  ? What is the standard deviation of this set of measurement?

## Appendix A

### Torques, Equilibrium, and Center of Mass

**Some Theory:** Torque is defined as force times length of lever arm. If an object is not rotating, then the sum of the torques acting on the object must be zero. In this case we say that the object is in static equilibrium.

This lab will serve as an introduction to hypothesis testing. The tests you'll use are given in the procedure below, so all you have to do is make predictions based on your overall hypothesis and see how well the predictions match your results. (In two labs in Physics II, you'll develop procedures to test your hypotheses.)

Note: 1) Use meters and kilograms for all measurements.

2) In all cases,  $x$  should be measured from the zero end of the meter stick.

3) The length  $l$  of each lever arm will be  $|x - x_0|$  where  $x_0$  is the center of mass of the meter stick.

4) Obtaining a perfect balance may be difficult. If the meter stick refuses to remain level, record the value that seems to work best.

#### Equipment:

Meter Stick (Non-Metal End)

Knife Edge Clamps – 3 with hooks and one without

Torque Balance

Hooked Masses

Beam Balance

Metal Cylinder

String

#### Procedure:

1) Read all three cases below. Then briefly state a hypothesis about torque and equilibrium that's general enough to cover all three cases. Using mathematical notation is a good idea.

2) Measure and record the mass of the three clamps with hooks ( $C_{1-3}$ ). Remember which clamp is which.

3) Measure and record the mass of a 50 g mass, a 100 g mass, and a 200 g mass (to make sure they're correct).

$C_1 =$  \_\_\_\_\_ 50 g mass = \_\_\_\_\_

$C_2 =$  \_\_\_\_\_ 100 g mass = \_\_\_\_\_

$C_3 =$  \_\_\_\_\_ 200 g mass = \_\_\_\_\_

4) Insert your meter stick through the hookless clamp and position it on the torque balance so that the zero end is to the left. Make sure the screw knob on that clamp is downward to lower the center of gravity and make the apparatus more stable.

5) Find the exact center of mass of the meter stick by finding the balance point. Record this position as  $x_0 =$  \_\_\_\_\_ and tighten the clamp at that position.

#### CASE I:

a) Hang the 50g mass at  $x_1 = 30.0$  cm and the 100 g mass at  $x_2 = 20.0$  cm. Use your hypothesis to mathematically predict the position  $x_3$  where a 200 g mass will balance the system.

Predicted  $x_3 =$  \_\_\_\_\_

b) Find and record the position  $x_3$  where a 200 g mass balances the system.

c) Record  $M_1 = C_1 + 50$  g mass,  $M_2 = C_2 + 100$  g mass, and  $M_3 = C_3 + 200$  g mass.

$x_1 = .300$  m     $l_1 =$  \_\_\_\_\_     $M_1 =$  \_\_\_\_\_     $F_1 =$  \_\_\_\_\_

$x_2 = .200$  m     $l_2 =$  \_\_\_\_\_     $M_2 =$  \_\_\_\_\_     $F_2 =$  \_\_\_\_\_

$x_3 =$  \_\_\_\_\_     $l_3 =$  \_\_\_\_\_     $M_3 =$  \_\_\_\_\_     $F_3 =$  \_\_\_\_\_

d) What should you calculate to determine how close your result was to your prediction? How close was it?

#### CASE II:

a) With the meter stick balanced attach the first clamp at  $x_1 = 40.0$  cm and suspend the 50 g mass from it.

b) Tie a loop at the end of a piece of string so that the loop will fit around the meter stick. Securely tie the other end of the string to the metal cylinder. Make sure that the string is short enough so that the cylinder does not hit the table when the string is looped around the meter stick.

c) Use the cylinder with the string attached to find and record the position  $x_2$  that balances the system.

d) Record  $M_1 = C_1 + 50$  g mass. Calculate  $l_1$  and  $F_1$ .

$x_1 = .400$  m     $l_1 =$  \_\_\_\_\_     $M_1 =$  \_\_\_\_\_     $F_1 =$  \_\_\_\_\_

$x_2 =$  \_\_\_\_\_     $l_2 =$  \_\_\_\_\_     $M_c =$  \_\_\_\_\_

e) Use your hypothesis to mathematically predict the mass ( $M_m$ ) of the cylinder.

Predicted  $M_m =$  \_\_\_\_\_

f) Use a balance to find the measured mass ( $M_m$ ) of the cylinder (and string).

$M_m =$  \_\_\_\_\_

g) Using the same method as in Case I, how close did your prediction come to the measured mass?

#### CASE III

a) Measure the mass of the meter stick = \_\_\_\_\_.

b) Reposition the center clamp so that  $x_0 = 35.0$  cm. Use your hypothesis to mathematically predict the point  $x_1$  at which you can hang the 100 g mass from the first clamp so it will balance the system.

Predicted  $x_1 =$  \_\_\_\_\_.

c) Using the first clamp and the 100 g mass, find and record the position  $x_1$  that balances the system.

$x_1 =$  \_\_\_\_\_.

d) Using the same method as in Case I, how close did your prediction come to your measured result?

Conclusion: Did your measurements confirm your hypothesis? What were sources of error? How could you improve this experiment as a way of testing your hypothesis?

## Appendix B

### Centripetal Force

If no net force acts upon a moving object, it will travel in a straight line with no change in speed. To cause an object to travel in a circular path, a force constantly perpendicular to the direction of motion must act upon the object. This force, called the centripetal force, will therefore always be directed toward the center of the circle.

#### Equipment

Glass Tube	String (Nylon or kite)
Rubber Stopper (Holed)	Hooked Masses
Stopwatch	Digital Balance

#### Procedure

*Express all of your masses in kilograms and distances in meters.*

1) Measure and record the mass of the rubber stopper. Call it  $m_s$ .

2) Tie the rubber stopper to one end of the string. Pass the free end of the string through the glass tube. Adjust the string so that the radius of the circular path of the stopper will be exactly 80.0 cm. This distance should be measured from the end of the glass tube to the center of the stopper, with the tube perpendicular to the meter stick. Using a pen or marker, mark spots on the string directly 1 cm above and 1 cm below the tube. Tie a knot that forms a small loop on the other end so that it will hang about 30 cm below the tube. If you leave some string below the loop, you'll be able to hold onto it to steady the weight.

Hang a 50 g mass from the loop. Practice whirling the stopper in a circular horizontal path above your head. It is important that the tube move as little as possible. The stopper is traveling at the desired speed when the weight force due to the hooked mass just barely supplies the centripetal force needed for the stopper to maintain a circular path of radius 80.0 cm. This will happen only if the glass tube stays between the two marks on the string. When the stopper is moving with the desired rotational speed, use the stopwatch to measure the time it takes the stopper to complete exactly 10 revolutions. Record this time. Calculate the average linear speed,  $v$ , of the stopper.

3) Hang 100 g worth of mass from the loop. Measure and record the time for exactly 10 complete revolutions and calculate the average linear speed of the stopper.

4) Hang 150 g worth of mass from the loop. Measure and record the time for exactly 10 complete revolutions and calculate the average linear speed of the stopper.

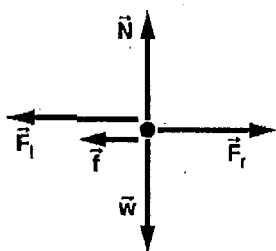
5) Hang 200 g worth of mass from the loop. Measure and record the time for exactly 10 complete revolutions and calculate the average linear speed of the stopper.

6) Hang 250 g worth of mass from the loop. Measure and record the time for exactly 10 complete revolutions and calculate the average linear speed of the stopper.

7) a) What is the weight of the mass that hung from the loop in step 4)? b) Calculate  $mv^2/r$  for the stopper in step 4). c) Calculate the percent error of  $mv^2/r$ , treating the weight of the hanging mass as the theoretical value.

- 8) Explain why the values in 7a) and 7b) should theoretically be the same.
- 9) Write your data from steps 2) through 6) as points where the hanging mass is the  $x$  value and the square of the speed is the  $y$  value. In other words, each point should be in the form  $(m_h, v^2)$ . Plot these points with a computer.
- 10) Use a computer to find and state the least-squares regression line for your data points and plot it on the same graph as 9). To do this in Excel, right-click on any point on the graph and choose "Add Trendline". Choose the options "Linear" and "Display Equation on Chart". (You may have to scroll down in the box with the options to see the latter.)
- 11) Find the percent difference between the slope of your regression line and  $7.84/m_s$ .
- 12) Explain why the slope of your line should equal  $7.84/m_s$ .
- 13) Discuss sources of error in this lab.
- 14) Did you divide the work in this lab by having each member of your group do different tasks or by having some members do all of one task, such as whirling the stopper or timing? How did you make those decisions?

interest if the acceleration of the child in the wagon is to be calculated? (See the free-body diagram.) (b) Calculate the acceleration. (c) What would the acceleration be if friction were 15.0 N?



33. A powerful motorcycle can produce an acceleration of  $3.50 \text{ m/s}^2$  while traveling at  $90.0 \text{ km/h}$ . At that speed, the forces resisting motion, including friction and air resistance, total  $400.0 \text{ N}$ . (Air resistance is analogous to air friction. It always opposes the motion of an object.) What is the magnitude of the force that motorcycle exerts backward on the ground to produce its acceleration if the mass of the motorcycle with rider is  $245 \text{ kg}$ ?

34. A car with a mass of  $1000.0 \text{ kg}$  accelerates from 0 to  $90.0 \text{ km/h}$  in  $10.0 \text{ s}$ . (a) What is its acceleration? (b) What is the net force on the car?

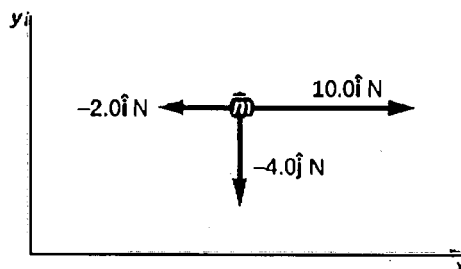
35. The driver in the previous problem applies the brakes when the car is moving at  $90.0 \text{ km/h}$ , and the car comes to rest after traveling  $40.0 \text{ m}$ . What is the net force on the car during its deceleration?

36. An  $80.0\text{-kg}$  passenger in an SUV traveling at  $1.00 \times 10^3 \text{ km/h}$  is wearing a seat belt. The driver slams on the brakes and the SUV stops in  $45.0 \text{ m}$ . Find the force of the seat belt on the passenger.

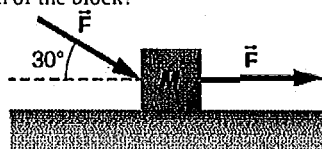
37. A particle of mass  $2.0 \text{ kg}$  is acted on by a single force  $\vec{F}_1 = 18 \hat{i} \text{ N}$ . (a) What is the particle's acceleration? (b) If the particle starts at rest, how far does it travel in the first  $5.0 \text{ s}$ ?

38. Suppose that the particle of the previous problem also experiences forces  $\vec{F}_2 = -15 \hat{i} \text{ N}$  and  $\vec{F}_3 = 6.0 \hat{j} \text{ N}$ . What is its acceleration in this case?

39. Find the acceleration of the body of mass  $5.0 \text{ kg}$  shown below.



40. In the following figure, the horizontal surface on which this block slides is frictionless. If the two forces acting on it each have magnitude  $F = 30.0 \text{ N}$  and  $M = 10.0 \text{ kg}$ , what is the magnitude of the resulting acceleration of the block?



#### 5.4 Mass and Weight

41. The weight of an astronaut plus his space suit on the Moon is only  $250 \text{ N}$ . (a) How much does the suited astronaut weigh on Earth? (b) What is the mass on the Moon? On Earth?

42. Suppose the mass of a fully loaded module in which astronauts take off from the Moon is  $1.00 \times 10^4 \text{ kg}$ . The thrust of its engines is  $3.00 \times 10^4 \text{ N}$ . (a) Calculate the module's magnitude of acceleration in a vertical takeoff from the Moon. (b) Could it lift off from Earth? If not, why not? If it could, calculate the magnitude of its acceleration.

43. A rocket sled accelerates at a rate of  $49.0 \text{ m/s}^2$ . Its passenger has a mass of  $75.0 \text{ kg}$ . (a) Calculate the horizontal component of the force the seat exerts against his body. Compare this with his weight using a ratio. (b) Calculate the direction and magnitude of the total force the seat exerts against his body.

44. Repeat the previous problem for a situation in which the rocket sled decelerates at a rate of  $201 \text{ m/s}^2$ . In this problem, the forces are exerted by the seat and the seat belt.

45. A body of mass  $2.00 \text{ kg}$  is pushed straight upward by a  $25.0 \text{ N}$  vertical force. What is its acceleration?

46. A car weighing  $12,500 \text{ N}$  starts from rest and accelerates to  $83.0 \text{ km/h}$  in  $5.00 \text{ s}$ . The friction force is  $1350 \text{ N}$ . Find the applied force produced by the engine.

47. A body with a mass of  $10.0 \text{ kg}$  is assumed to be in





**Appendix D**  
**Calculus-based Physics I**  
**Final Exam**

If you can't get part a) of a problem, answer part b) in terms of the unknown answer to part a).

1. A spring with a 5.50 g mass on the end vibrates at  $4.00 \times 10^2$  Hz.
  - a) What is the spring constant?
  - b) If the spring was released 0.0300 m from equilibrium, what is the speed of the mass 0.0100 m from equilibrium? Hint: Use conservation of energy.
2. The mass of the dwarf planet Pluto is  $1.31 \times 10^{22}$  kg and its radius is  $1.15 \times 10^6$  m. What is the acceleration of gravity on its surface?
3. A stunt pilot ( $m = 70.0$  kg) who has been diving vertically at 180 m/s pulls out of the dive by changing course to a vertical circle, without changing speed. What is the minimum radius of the circle if the acceleration should not exceed  $6.00g$  at the lowest point? (That's known as 6 g's.)
4. A 5.00 kg block slides down a plane inclined at  $40.0^\circ$  to the horizontal. The coefficient of kinetic friction is 0.200.
  - a) Find the acceleration of the block.
  - b) How much time does the block take to slide 0.500 m starting from rest?
5.
  - a) A geologist finds that a Moon rock with a mass of 9.28 kg has an apparent mass of 6.18 kg when submerged in water. Find the volume and the density of the rock.
  - b) What is the difference between the blood pressure in a giraffe's head, 4.60 m above the ground, and its feet at ground level? Use  $1060 \text{ kg/m}^3$  as the density of giraffe blood.
6.
  - a) A merry-go-round on a frictionless axle initially makes one revolution every 6.00 s. Its rotational inertia is  $1200 \text{ kg}\cdot\text{m}^2$ . A child presses against its railing (at a distance of 2.20 m from the center) with a force of 5.00 N. The coefficient of kinetic friction between the child's hand and the merry-go-round is 0.400. How long does the merry-go-round take to stop?
  - b) (unrelated) A horizontal boom weighs 2600 N and is attached with a frictionless pivot at one end. It is 8.0 m long and its center of mass is 2.8 m from the pivot. At the other end, a guy wire at an angle of  $83.0^\circ$  from the horizontal leads up to the ceiling to

support the boom. There's a weight of  $5.0 \times 10^2 \text{ N}$  at a distance of 7.7 m from the pivot. Find the tension in the guy wire.

$$G = 6.67 \times 10^{-11} \text{ N/m}^2$$

The density of water is  $1.00 \times 10^3 \text{ kg/m}^3$

## Appendix E

### Sample Quantitative Reasoning question

Is the solution to this problem correct? If not, what are the errors?

Q: A tetherball is hit so it moves at constant speed in a circle of radius 1.20 m in 0.800 seconds. What is its acceleration?

A: We use  $x = x_0 + v_0 t + \frac{1}{2} a t^2$ . Assuming the tetherball starts from rest,  $v_0 = 0$  and we have

$$a = \frac{2x}{t_0^2}, \text{ so } a = 3.75 \text{ m/s}^2.$$

The answer is that the solution is incorrect because the equation used applies only to constant acceleration, not to uniform circular motion. The correct equation is  $a = v^2/r$ . Also, the speed is constant, so  $v_0 \neq 0$ .

### Sample Sustainability question

What source of energy do you think would be beneficial to emphasize? Explain, using at least one fact that was not mentioned in class.

Scoring: Out of 10 points, 2 for naming any energy source, 4 for giving its advantages correctly at the level of the course, 4 for the additional fact.



# MATH 110 – College Algebra

## Sample Final Exam

- 1) Give the intercepts and maximum value of the function.

$$f(x) = -x^2 + 8x - 7$$

- A) Intercepts are (0,-7), (7,0) and (-1,0); maximum is 9  
B) Intercepts are (0,7), (-7,0) and (-1,0); maximum is -9  
C) Intercepts are (0,-7), (7,0) and (1,0); maximum is 9  
D) Intercepts are (0,7), (7,0) and (-1,0); maximum is 4

\_\_\_\_\_

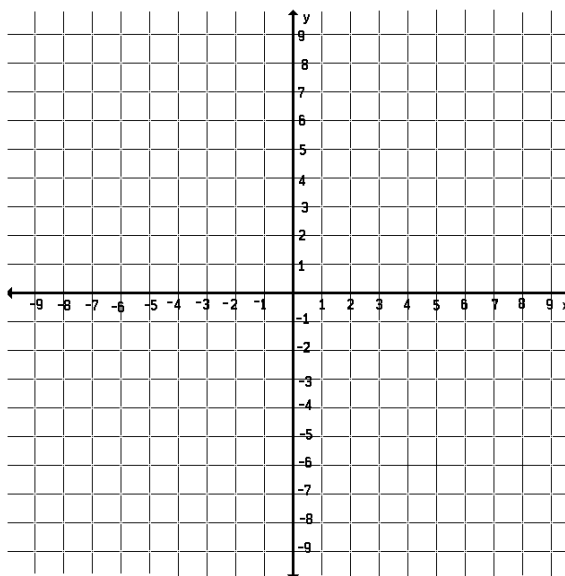
- 2) Sketch the graph of  $f(x) = -x^2 - 2x + 3$  and identify the  $x$  – and  $y$  – intercepts, axis of symmetry and the vertex.

$x$ -intercept(s): \_\_\_\_\_

$y$ -intercept: \_\_\_\_\_

vertex: \_\_\_\_\_

axis of symmetry: \_\_\_\_\_



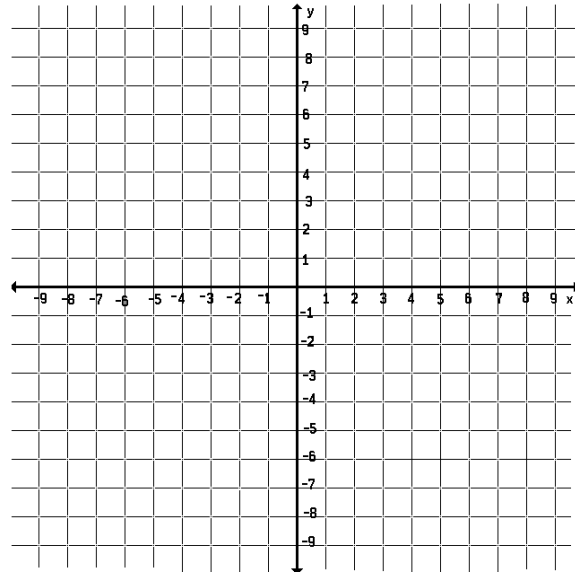
- 3) Sketch the graph of  $f(x) = x^3 - x^2 - 10x - 8$ , identify the  $x$  - intercepts,  $y$  - intercepts and state the results of the leading coefficient test.

$x$ -intercept(s): \_\_\_\_\_

$y$ -intercept: \_\_\_\_\_

As  $x \rightarrow -\infty$ ,  $y \rightarrow$  \_\_\_\_\_

As  $x \rightarrow \infty$ ,  $y \rightarrow$  \_\_\_\_\_

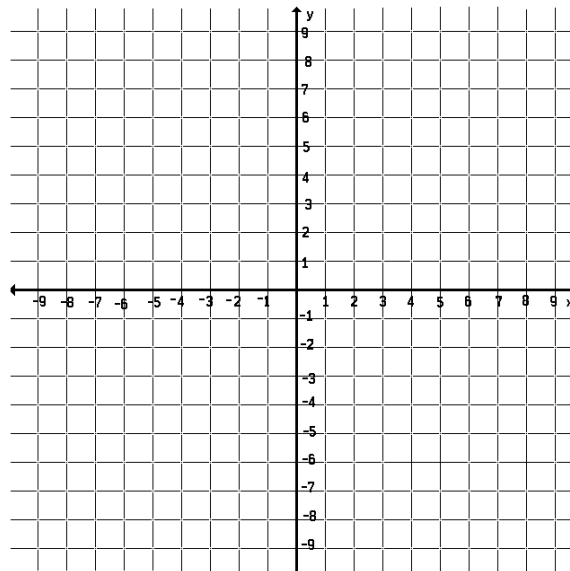


- 4) Sketch the graph of  $f(x) = \frac{x+1}{(x+5)(x-3)}$  and identify all asymptotes and intercepts. Draw the asymptotes on the graph.

Asymptotes: \_\_\_\_\_

x-intercept(s): \_\_\_\_\_

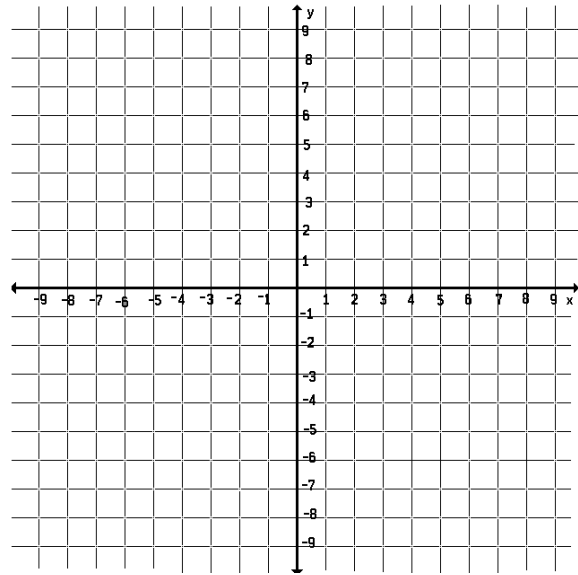
y-intercept: \_\_\_\_\_



- 5) Sketch the graph of  $f(x) = 4^x + 2$  by identifying the parent function, the asymptote and making use of basic transformation techniques. Draw the asymptote on the graph.

Parent function: \_\_\_\_\_

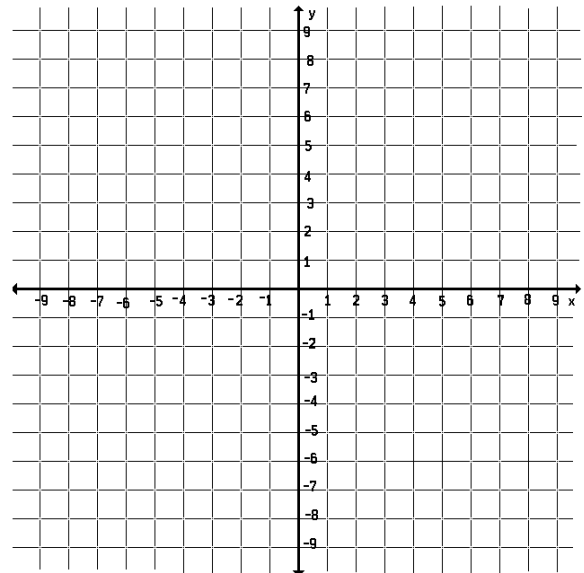
Asymptote: \_\_\_\_\_



- 6) Sketch the graph of  $f(x) = \log_3(x - 2)$  by identifying the parent function, the asymptote and making use of basic transformation techniques. Draw the asymptote on the graph.

Parent Function: \_\_\_\_\_

Asymptote: \_\_\_\_\_





7) Solve the exponential equation:  $3^{x-5} = 13$

- A) 7.33
- B) -0.47
- C) 6.47
- D) 9.33

---

8) Solve the logarithmic equation:  $\log(x) + \log(x - 5) = \log(6)$

- A) No solution
- B) -1
- C) -1, 6
- D) 6

---

9) Solve:  $x^4 - 4x^3 + 7x^2 - 16x + 12 = 0$

A)  $1, 3, -2i, 2i$

B)  $1, 3, 2i$

C)  $2, -2, 1, 3$

D)  $-1, -3, -2i, 2i$

\_\_\_\_\_

10) Solve the system of equations.

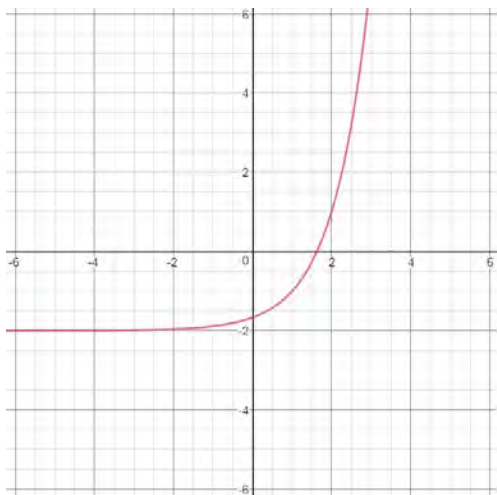
$$\begin{cases} x + y - z = -1 \\ 4x - 3y + 2z = 16 \\ 2x - 2y - 3z = 5 \end{cases}$$

$x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_

$z =$  \_\_\_\_\_

11) Give domain, range and asymptote of  $f(x) = 3^{x-1} - 2$



- A) Domain:  $(-\infty, \infty)$ , Range:  $[0, \infty)$ ,  $y = 2$   
B) Domain:  $(-\infty, \infty)$ , Range:  $(-2, \infty)$ ,  $y = -2$   
C) Domain:  $(1, \infty)$ , Range:  $(-\infty, \infty)$ ,  $x = 2$   
D) Domain:  $[1, \infty)$ , Range:  $(-\infty, \infty)$ ,  $x = -2$

12) What is the domain of the function:  $y = \log(x - 1)$ ?

- A)  $(1, \infty)$   
B)  $(-1, \infty)$   
C)  $(-\infty, 1)$   
D)  $(-\infty, \infty)$

- 13) The following equation represents profits of a small, high-end fashion company for selling  $x$  of their hottest shirts:  $P(x) = -2x^2 + 1000x + 5$ . What number of shirts yields the highest profit?

A) 125,005 shirts  
B) 1,000 shirts  
C) 500 shirts  
D) 250 shirts

\_\_\_\_\_

- 14) The manager of a small company that produces roof tiles has determined that the total cost in dollars,  $C(x)$ , of producing  $x$  units of the tile is given by  $C(x) = 350x + 4500$ , while the revenue in dollars,  $R(x)$ , from the sale of  $x$  units of tile is given by  $R(x) = 500x$ . Find the break-even point (where revenue = cost).

A) 150  
B) 20  
C) 30  
D) 1000

\_\_\_\_\_

- 15) At the Book Exchange, all paperbacks sell for one price and all hardbacks sell for another price. Tanya got six paperbacks and three hardbacks for \$11.25, while Gretta got four paperbacks and five hardbacks for \$11.85. What was Todd's bill for five paperbacks and nine hardbacks?

A) \$21.10  
B) \$16.50  
C) \$18.80  
D) \$15.25

\_\_\_\_\_

- 16) A student wishes to invest \$120 in a savings account yielding 2% annual interest compounded quarterly. How much will his investment be worth at the end of one year?

A) \$130.05  
B) \$122.42  
C) \$124.12  
D) \$120.42

\_\_\_\_\_

17) As some chemicals age they break down. Your car engine needs 5 L of 5W30 oil to operate. You take it in for an oil change every 3 months, but notice the level is 4.5 L at that time. Assuming you do not have an oil leak and your engine is not burning the oil, at what rate does the oil in your car break down? Use an exponential decay model.

- A) 3.9%
- B) 5.2%
- C) 2.6%
- D) 3.5%

\_\_\_\_\_

18) An amount of \$6750 is invested in an account at 4% interest. If the interest is compounded continuously for 5 years, how much is in the account at the end of that time?

- A) \$7200.00
- B) \$8244.47
- C) \$8523.67
- D) \$9145.13

\_\_\_\_\_

Table 16.4 Climatic data for Quito, Ecuador

Quito, Ecuador lat. 0°, long. 79°W; 2770 m													
	J	F	M	A	M	J	J	A	S	O	N	D	Year
Temp. (°C)	13	13	13	13	13	13	13	14	14	13	13	13	13
Precip. (mm)	99	110	142	175	137	43	20	30	69	113	95	93	1126

Criteria used for the selection of the climate type of Quito, Ecuador: \_\_\_\_\_

Using your text as a reference, answer questions 46–60.

43. Locate Quito, Ecuador, on a map or globe. Considering its location, what effect has altitude had on the climatic classification?

46. Atmospheric pollutants can be grouped into two categories—*primary* and *secondary*. Briefly describe each category.

Primary pollutants: \_\_\_\_\_

44. Why would you expect the vegetation in the area of Quito to be different from that found at Guayaquil, Ecuador, a city located on the coast?

Secondary pollutants: \_\_\_\_\_

45. From Figure 16.3, where is the greatest continuous expanse of high-altitude climate located?

Table 16.5 lists many of the types, sources, and amounts of primary pollutants. Use the table to answer questions 47–49.

## Human Impact on Climate and Weather

Recently the human impact on climate and weather has been receiving close attention by scientists. Accelerating urbanization, with an increasing number of factories, office buildings, roads, and homes, alters existing *microclimates* and may contribute to the modification of global climates. In this section you will investigate some of the ways that human activities are changing the atmospheric environment and the possible consequences.

47. What is the leading source (by weight) of primary pollutants? How many metric tons of material does this source add to the atmosphere each year?

\_\_\_\_\_ ; \_\_\_\_\_ million metric tons/year

48. (Carbon monoxide, Sulfur oxides) is/are the most abundant primary pollutant. It accounts for approximately (25%, 50%, 75%) of all primary pollutants. Circle your answers.

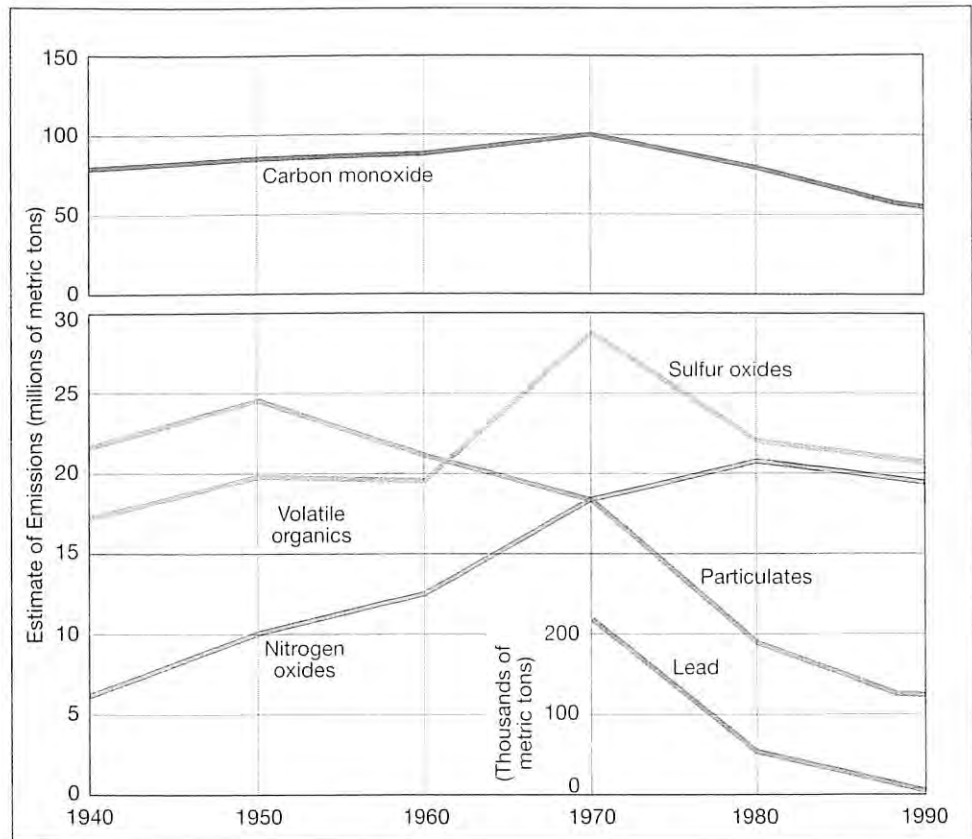
Table 16.5 Estimated 1990 nation-wide emissions (millions of metric tons/year)

Source	Carbon Monoxide	Particulates	Sulfur Oxides	Volatile Organics	Nitrogen Oxides	Total
Transportation	43.5	1.6	1.0	5.1	7.3	58.5
Stationary Source						
Fuel Combustion	4.7	1.9	16.6	0.7	10.6	34.5
Industrial						
Processes	4.7	2.6	3.2	7.9	0.6	19.0
Solid Waste						
Disposal	2.1	0.3	0.0	0.7	0.1	3.2
Miscellaneous	7.2	1.2	0.0	2.8	0.2	11.4
Total	62.2	7.6	20.8	17.2	18.8	126.6

Source: U.S. Environmental Protection Agency

FIGURE 16.6

Estimated emissions of six pollutants in the United States from 1940 to 1990. (Source: U.S. Environmental Protection Agency)



49. What is the total weight of all primary pollutants added to the atmosphere?

\_\_\_\_\_ million metric tons/year

Figure 16.6 illustrates the estimated emissions of six pollutants in the United States from 1940 to 1990. Use Figure 16.6 to answer questions 50–51.

50. Write a brief, general statement comparing the emissions prior to 1970 to those after 1970. What effect do you think the Clean Air Act of 1970 had on nationwide emissions?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

51. Which pollutant has shown the greatest percentage reduction since 1970? Suggest a reason for such a large reduction.

\_\_\_\_\_  
\_\_\_\_\_

Table 16.6 shows the average climatic changes produced by cities. Use the table to answer questions 52–55.

52. Compared to rural areas, which elements are increased by urbanization?

\_\_\_\_\_  
\_\_\_\_\_

53. Compared to rural areas, which elements are decreased by urbanization?

\_\_\_\_\_  
\_\_\_\_\_

54. Of all the elements listed in Table 16.6, which shows the greatest increase due to urbanization? What might be a contributing factor to the increase?

\_\_\_\_\_

55. Indicate a possible reason for each of the following effects that cities have on their weather.

Increased frequency of thunderstorms: \_\_\_\_\_



Table 16.6 Average climatic changes produced by cities

Element	Comparison with Rural Environment
Particulate matter	10 times more
Temperature	
Annual mean	0.5–1.5°C higher
Winter	1–2°C higher
Solar radiation	15–30% less
Ultraviolet, winter	30% less
Ultraviolet, summer	5% less
Precipitation	5–15% more
Thunderstorm frequency	16% more
Winter	5% more
Summer	29% more
Relative humidity	6% lower
Winter	2% lower
Summer	8% lower
Cloudiness (frequency)	5–10% more
Fog (frequency)	60% more
Winter	100% more
Summer	30% more
Wind speed	25% lower
Calms	5–20% more

Source: After Landsberg, Changnon, and others.

Lower wind speed: \_\_\_\_\_

Increased precipitation: \_\_\_\_\_

One of the major concerns of atmospheric scientists is the effect that increasing levels of carbon dioxide (Figure 16.7) and other gases will have on global climates and the environment in general. Answer questions 56–64 using Figure 16.7 and/or your text as references.

56. Explain what is meant by the term *global warming*.

57. What is the principal atmospheric gas responsible for global warming and how does it contribute to atmospheric temperatures?

58. Referring to Figure 16.7, what has been the increase (in ppm) in the concentration of atmospheric carbon dioxide monitored at Mauna Loa from 1960 to 1990?

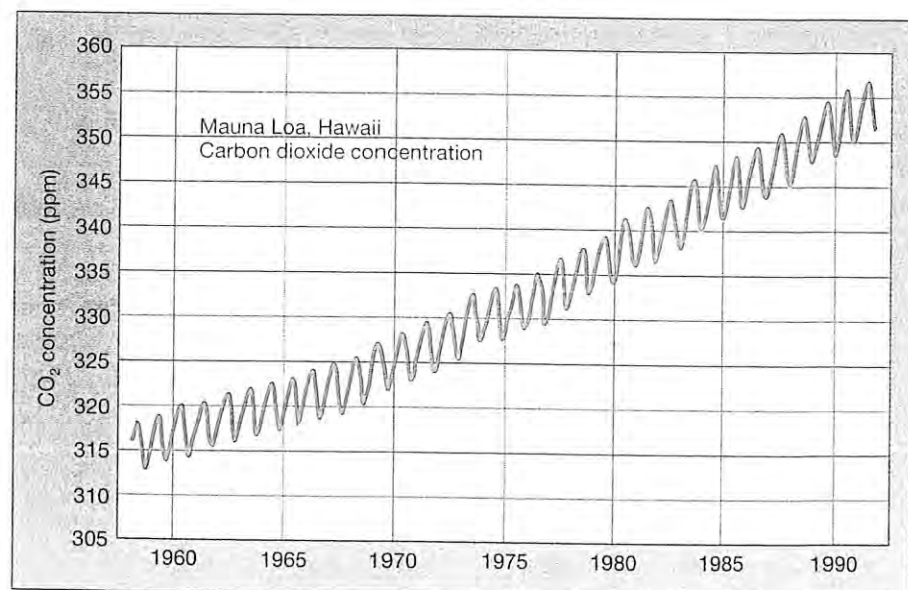
Increase of \_\_\_\_\_ ppm

59. Using Figure 16.7, calculate the percentage increase in atmospheric carbon dioxide at Mauna Loa from 1960 to 1990.

Increase of \_\_\_\_\_ %

FIGURE 16.7

Concentration of atmospheric carbon dioxide monitored at Mauna Loa Observatory in Hawaii. The yearly oscillation is caused by the seasonal growth and decay of vegetation. (After NOAA)



60. What was the approximate average annual percentage increase in atmospheric carbon dioxide monitored at Mauna Loa from 1960 to 1990?

Approximate annual increase = \_\_\_\_\_%

61. In what way does each of the following contribute to global warming?

Burning fossil fuels: \_\_\_\_\_

\_\_\_\_\_

Removing large areas of forests: \_\_\_\_\_

\_\_\_\_\_

62. If the level of gases that contribute to global warming continues to increase at the current rate, what is the predicted increase in global surface temperatures by the second half of the next century?

Between \_\_\_\_\_°C and \_\_\_\_\_°C

63. What might be the consequences of global warming on each of the following?

Sea level: \_\_\_\_\_

\_\_\_\_\_

Agriculture: \_\_\_\_\_

\_\_\_\_\_

Global pattern of precipitation: \_\_\_\_\_

\_\_\_\_\_

Paths of large-scale cyclonic storms: \_\_\_\_\_

\_\_\_\_\_

Many natural events have, or could, cause global climates to change.

64. List two or three natural events that cause global climates to change.

\_\_\_\_\_

\_\_\_\_\_

## Review

Having completed the exercise, you should know the following:

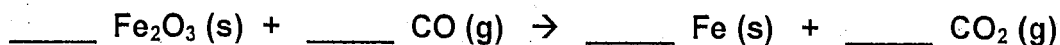
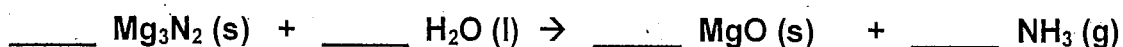
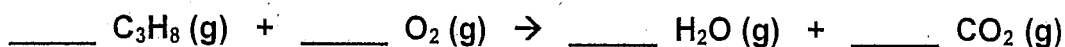
1. Climate data are often presented on a climograph.
2. The Köeppen system is the most-used classification for presenting the world pattern of climates.
3. Four of the five Köeppen climate groups are defined on the basis of temperature characteristics.
4. Each of the five Köeppen climate groups has definite characteristics.
5. How the climatic classification of a place is determined.
6. The global distribution of the principal Köeppen climate groups.
7. There are two categories of atmospheric pollutants—primary and secondary.
8. Cities, when compared to rural areas, experience more precipitation, have considerably greater amounts of particulate matter in the air, and higher temperatures.
9. The level of the primary gas responsible for global warming, carbon dioxide, is increasing at a rate that may significantly alter the global temperature by the second half of the next century.
10. Natural events, such as volcanic activity and the movement of lithospheric plates, are responsible for changes in climate.

Chemistry 1215, Santa Fe Community College

Stoichiometry Homework 2

Name \_\_\_\_\_

1. Balance each of the following equations. Each of the stoichiometry questions that follows will refer to one of these three chemical reactions.



2. How many grams of water are required in order to react completely with 2.97 g of  $\text{Mg}_3\text{N}_2$ ?
3. When 10.0 g of propane ( $\text{C}_3\text{H}_8$ ) reacts with 8.0 g of oxygen ( $\text{O}_2$ ), which is the limiting reactant?
4. When 3.00 moles of  $\text{Fe}_2\text{O}_3$  reacts with 7.50 moles of CO, which is the limiting reactant?

5. How many grams of carbon monoxide are required in order to produce 10.0 g of iron?
6. How many grams of MgO can be produced from 10.0 g  $\text{Mg}_3\text{N}_2$ ?
7. How many grams of  $\text{CO}_2$  can be produced from 10.0 g of  $\text{C}_3\text{H}_8$  and 10.0 g of  $\text{O}_2$ ?
8. How many moles of  $\text{NH}_3$  can be produced from 1.50 moles of  $\text{Mg}_3\text{N}_2$  and 15.0 g of water?

## New Mexico History Outcomes Assessment

Multiple Choice: Read each question carefully and select the best answer to the following questions.

1. Identify the two recurring themes in New Mexico history.
  - a. The living conditions of New Mexico are often inhospitable, and the people typically live in isolation.
  - b. Civilization in New Mexico develops in areas that support agriculture and trade, and location makes trade difficult for the people of New Mexico.
  - c. The role of race plays a major role in the interactions of peoples in New Mexico, and New Mexicans contribute a great deal to the U.S. and the World.
  - d. New Mexico's colonial legacy affects the perception of New Mexico, and New Mexico's perceived wild past caused problems for New Mexicans when they applied for statehood.
2. The largest of New Mexico's land form provinces is the
  - a. Great Plains.
  - b. Colorado Plateau.
  - c. Rocky Mountains.
  - d. Basin and Range.
3. The first humans to arrive in N.M. were primarily
  - a. small game hunters.
  - b. big game hunters.
  - c. plant foragers.
  - d. early farmers.
4. The two prominent archaeological sites in N.M. for early humans can be found in what part of the state?
  - a. Northern
  - b. Eastern
  - c. Western
  - d. Southern
5. The Mogollon Culture existed in
  - a. Northwestern New Mexico
  - b. Northeastern New Mexico
  - c. Southwestern New Mexico
  - d. Southeastern New Mexico

6. The pre-pueblo people (Anasazi) began making above ground adobe structures during the
  - a. Basketmaker Culture
  - b. Modified Basketmaker Culture
  - c. Developmental Pueblo Culture
  - d. Great Pueblo Period.
7. By the time of the Developmental Pueblo Culture, the Anasazi were skilled at
  - a. pottery making.
  - b. farming.
  - c. hunting with a bow and arrow.
  - d. all the above.
8. The major cause for the decline of the pre-pueblo people (Anasazi) after 1100 A.D. was
  - a. multiple Athabascan invasions.
  - b. European disease.
  - c. massive internal warfare.
  - d. extended and persistent drought.
9. What were the three primary crops traditionally grown by Pueblo People?
  - a. corn, beans, and squash
  - b. corn, squash, and watermelons
  - c. beans, wheat, and barley
  - d. corn, wheat, and tobacco
10. What were the purposes of the Pueblo Peoples' Kachina religious practices?
  - a. to bring success in hunting, just as many other people may pray to be successful in life
  - b. to ensure long life, just as most everyone would like to live a long life
  - c. to protect the people from Comanche tax collectors, just as many people ask for divine protection from god or a higher being
  - d. to bring rain for crops and good health for people, just as many people pray for such things
11. In most Athabascan peoples, religious rites were conducted by a
  - a. Medicine Man.
  - b. Tribal Chief.
  - c. Shaman.
  - d. Gahan.

12. The first of the Athabascan peoples in New Mexico to abandon complete nomadic life and become more settled were the
- Navajo.
  - Comanche.
  - Jicarilla Apache.
  - Mescalero Apache.
13. Who led the first Spanish expedition into the lands that are now New Mexico?
- Francisco Vasquez de Coronado
  - Alvar Nunez Cabeza de Vaca
  - Ponce de Leon
  - Juan de Onate
14. What originally led the first Spanish expedition to New Mexico?
- They were drawn by the legends of haunted villages and mines full of copper.
  - They believed that there was a promise of land with no Indians.
  - The driving force was Columbus' discovery of gold in the New World.
  - The legend of Seven Golden Cities of Cibola proclaimed by Fray Marcos de Niza.
15. Which of the following Spanish led expeditions to New Mexico in the 1580s and 1590s?
- Fray Agustin
  - Fray Bernadino
  - Canstano de Sosa
  - all the above
16. The first but short lived Spanish "colony" or settlement in New Mexico in 1590 was located at
- Santa Fe.
  - Santa Domingo.
  - Pecos.
  - Taos.
17. Why did Governor Don Pedro de Peralta—the second governor of New Mexico—move the capital of New Mexico from San Gabriel to Santa Fe?
- Peralta decided he did not like living in San Gabriel.
  - Peralta wanted to live closer to potential gold and silver mines.
  - Peralta relocated to an area with a regular water source, ample land for cultivation, a more defensible location, and no Pueblo Indians in vicinity.
  - Former governor Juan de Oñate, instructed Peralta to relocate the village so that it would be closer to Mexico City.

18. After the 1599 massacre of most of the citizens of Acoma Pueblo by Spanish soldiers and war dogs, the few surviving citizens were force marched to Santo Domingo – what happened to the survivors?
- the Spanish leader apologized for acts of terror, compensated the remaining Acomans, and escorted them back to Acoma
  - they were given fair trials and most were freed to return to their homes
  - they were treated with the respect due to prisoners of war according to las Leyes de Indias, the Spanish royal laws issued by King Philip II
  - sixty girls were permanently separated from their parents and family members to be sold 2000 miles south into slavery, twelve more children were given to Spanish priests, adults became slaves for twenty years, and the men among them had part of one foot cut off.
19. The Spanish system of labor and tribute that subjected natives to Spanish law and created hardship and near slavery was the
- Alcaldes Mayores.
  - Cabildo.
  - Custodio.
  - Encomienda.
20. The Native Pueblo Peoples in New Mexico suffered terribly in New Mexico during the mid-1600s from
- European diseases to which they had no immunity.
  - the Spanish persecution of Native religion.
  - the burden of the requirements of the Encomienda system coupled with drought.
  - all the above.
21. As a result of a native revolt and a decisive Spanish defeat at the hands of the Pueblo forces led by Pope in 1680,
- the Spanish quickly regrouped and defeated the Pueblos.
  - the Spanish were driven from New Mexico for 12 years, while initially Native leadership under Pope sought to wipe out Spanish influence and culture.
  - the Pueblo Peoples maintained unity and tight alliance for many decades.
  - none of the above.
22. During Don Diego de Vargas' first expedition to reconquer New Mexico in 1692,
- there was a bloodbath of fighting between the Spanish and native tribes.
  - there were several pitched battles between the Spanish and native tribes that resulted in significant casualties.
  - de Vargas was able to conduct a reasonably peaceful expedition that retook Santa Fe and received native pledges of loyalty with only two casualties.
  - de Vargas was completely repulsed and forced back to El Paso.



23. What was one of the consequences of Spanish reconquest and colonization of the Pueblo Nations of the Rio Grande Valley after 1691?
- a. The Spanish continued to spread smallpox and other diseases, while increasing pressure was put upon the Pueblos by nomadic Navajo, Apache and other raiders.
  - b. The Pueblo Peoples lost several thousand residents who left to live with the Hopi rather than submit to Spanish rule.
  - c. The Spanish became more tolerant of native religion and no longer raided Kivas or destroyed objects of Pueblo faith.
  - d. all the above.
24. After the Pueblo Revolt, with the Spanish gone, the new availability of this animal changed the nature of life for both Pueblo Nations, and especially the Nomadic Tribes.
- a. Sheep
  - b. Cattle
  - c. Oxen
  - d. Horses
25. Spanish hegemony seemed secure in New Mexico until what new threat emerged in 1803?
- a. England seized Oregon Territory.
  - b. The United States gained the Louisiana Purchase.
  - c. The French expanded into Texas.
  - d. Civil war and rebellion broke out in Mexico.
26. According to the colonial census of New Mexico in 1790 (which did not include Indians), the majority of Spanish speaking people living in New Mexico by then were
- a. Spaniards born in Spain.
  - b. Spaniards born in another Province of New Spain.
  - c. people of mixed blood from El Paso.
  - d. people born in New Mexico, many of mixed blood.
27. In colonial New Mexico, the main occupation of the people was
- a. farming.
  - b. tool making.
  - c. adobe making.
  - d. Weaving.
28. Practically the only way to acquire outside and/or manufactured in colonial New Mexico was to receive them was
- a. over the Chihuahua Trail.
  - b. over the El Camino Real.
  - c. over the Old Spanish Trail.
  - d. all the above.

29. What did the colonial government in New Spain require in lieu of taxes from settlers in New Mexico?
- a. They required settlers to send trade items in the form of crops and livestock to Mexico City.
  - b. They required settlers to build fortified cities.
  - c. They required settlers to settle the region by mining and farming in order to supply the army with food and supplies.
  - d. They required settlers to settle the region and provide military service to act as a buffer between the frontier and Mexico.
30. The new avenue of trade and migration that opened up to New Mexico after 1821 from the east and greatly changed life in the territory was the
- a. Texas Trail.
  - b. Cimmaron Trail.
  - c. the New Chihuahua Trail.
  - d. the Santa Fe Trail.
31. Who was the local leader who owned the first printing press in New Mexico, wrote and printed the first book printed in New Mexico, and was responsible for educating many future New Mexico leaders?
- a. Kit Carson
  - b. Manuel Armijo
  - c. Padre Antonio Jose Martinez
  - d. Albino Perez
32. This native New Mexican governor ruled for eight years, stopped the Chimayo Revolt and a Texan incursion, but was forced to withdraw to Mexico upon American invasion.
- a. Albino Perez
  - b. Antonio Jose Martinez
  - c. Manuel Armijo
  - d. Jose Gonzales

33. What did both Mexico and the United States receive as a result of the Treaty of Guadalupe Hidalgo?
- a. Mexico and the United States would be at peace for ten years.
  - b. The United States received a third of Mexico's land, and Mexico retained large portions of New Mexico.
  - c. The United States received New Mexico, and Mexico continued to hold large portions of Arizona and California.
  - d. The United States received a third of Mexico's land, including New Mexico, Arizona, and California, and the United States promised to help Mexico with the release of those captured by Indians in New Mexico, Arizona, and California, as well as \$15 million.
34. What act of Congress gave New Mexico Territorial status but also raised the question of slavery in the Territory?
- a. The New Mexico Act of 1848
  - b. The Treaty of Guadalupe-Hidalgo
  - c. The Gadsden Purchase
  - d. The Compromise of 1850
35. What pivotal battle in Northern New Mexico in 1862 saw the most intense fighting and ruined the Confederacy's chances for success in New Mexico - and the West?
- a. Fort Union
  - b. Fort Marcy
  - c. Glorieta Pass
  - d. Peralta.
36. Who led U.S. Military forces in an 1862-1863 campaign against the Mescalero and Navajo Nations that resulted in the establishment of the first Indian reservation in New Mexico at Bosque Redondo and the "Long Walk?"
- a. Colonel Edward Canby
  - b. Colonel Kit Carson
  - c. Colonel Francisco Chaves
  - d. Major John Chivington

37. The U.S. Government responded to the growing Indian Wars in New Mexico in 1874 by deploying the 9th and 10th Cavalry, or the \_\_\_\_\_, as the Indians named them.
- Hell's Brigade
  - Buffalo Soldiers
  - Devil's Riders
  - Blue Coats
38. The Lincoln County War was fought over:
- the rights of cattlemen to graze the range.
  - control of the county's economic life.
  - religious freedom.
  - excise taxes.
39. In what ways did the railroad affect the New Mexico territory?
- The railroad boosted the population, settlement and development of New Mexico.
  - The railroad boosted trade in New Mexico.
  - The railroad brought New Mexico out of isolationism and encouraged immigration.
  - All of the above.
40. The Santa Fe Ring was
- a notorious group of outlaws operating in Santa area.
  - a confederation of native Hispanics determined to overthrow the Anglo controlled territorial government.
  - a group of powerful cattlemen and sheepman determined to control the territorial government in Santa Fe.
  - a loose confederation of lawyers, politician, and businessmen determined to run the territory - and notorious for their underhanded land acquisitions led by Thomas B. Catron.
41. New Mexico gained fame in the Spanish-American War of 1898 by
- sending more volunteers to the Army than any other place in the U.S.
  - by supplying more cattle and corn to the U.S. troops than anywhere in the U.S.
  - by supplying a large portion of Teddy Roosevelt's Roughriders, who were famous for their bravery in Cuba.
  - providing a huge share of the coal and copper needed for the war effort.

42. The Columbus, N.M. Raid of 1916 was
- conducted by Francisco "Pancho" Villa and 500 of his men.
  - directly a result of the ongoing Civil War in Mexico.
  - directly a result of President Wilson's support and recognition of General Venustiano Carranza instead of the rivals in Mexico.
  - all the above.
43. During World War I, New Mexico's contributions to the war effort included all of the following EXCEPT:
- New Mexicans flocked as volunteers to the armed forces and the state had the highest casualty rate per capita of any state in the union.
  - the state produced vast quantities of minerals and agricultural goods for the war effort.
  - the state hosted one of the largest army training centers in the nation - Camp Cody.
  - the state produced the supreme commander of the U.S. forces in Europe - General "Black Jack" Pershing was born in Albuquerque.
44. What was the goal of the Indian Reorganization Act?
- It was to take reservation land from the Indians.
  - It was to try to assimilate Indians to make them act like white men.
  - It was to try to fix problems for Indians that earlier policies had created.
  - It was to restructure tribal governments.
45. As a result of several of President Roosevelt's New Deal Programs such as the WPA, CCC, and NYA, and the advocacy of Senator Dennis Chavez to bring federal programs to the state, which of the following were built in New Mexico as part of New Deal Work Programs?
- Conchas Dam
  - the facilities at Bandelier National Monument
  - the library and administration building at the University of New Mexico
  - all the above
46. Among the many contributions of New Mexican soldiers during World War II were:
- New Mexico had the highest volunteer and casualty rate of any state in the union.
  - New Mexico hosted the Manhattan Project and the first atomic detonation, as well as a number of other Army Air Corps Bases.
  - New Mexico provided specialized Navajo troops to the U.S. Marines that were crucial in the Pacific battlefields as "Code Talkers."
  - all the above.

47. After World War II, \_\_\_\_\_ became a "cornerstone of New Mexico's economy."
- a. agriculture
  - b. defense
  - c. farming
  - d. mining
48. In the 2000 federal census, which of the following ethnic groups made up a majority of the total population of residents in New Mexico?
- a. Anglos
  - b. Hispanic
  - c. Native American
  - d. No group has a majority - New Mexico is a "minority-majority" state.
49. As a result of rising Hispanic dissatisfaction in Northern New Mexico over land grants, grazing and water rights, in the 1960s:
- a. Reies Lopez formed the activist group Alianza Federal de Mercedes.
  - b. Alianza seized an amphitheater on national forest land and arrested forest rangers while declaring a new country.
  - c. Alianza seized control of the county courthouse in Tierra Amarilla and conducted a shootout with authorities, prompting the Lt. Governor to send in the National Guard.
  - d. all the above.
50. Among the many challenges New Mexico faces in the future, probably the greatest challenge facing the state and its residents are:
- a. availability and conservation of water.
  - b. viable industries.
  - c. maintaining a stable population.
  - d. land use.

# 37

## Respiratory System Physiology

### Learning Outcomes

- ▶ Define the following and provide volume figures if applicable:
 

inspiration	inspiratory reserve volume (IRV)
expiration	minute respiratory volume (MRV)
tidal volume (TV)	forced vital capacity (FVC)
vital capacity (VC)	forced expiratory volume (FEV <sub>1</sub> )
expiratory reserve volume (ERV)	
- ▶ Explain the role of muscles and volume changes in the mechanical process of breathing.
- ▶ Describe bronchial and vesicular breathing sounds.
- ▶ Demonstrate proper usage of a spirometer or an airflow transducer and associated BIOPAC® equipment.
- ▶ Discuss the relative importance of various mechanical and chemical factors in producing respiratory variations.
- ▶ Explain the importance of the carbonic acid–bicarbonate buffer system in maintaining blood pH.

### Pre-Lab Quiz



Instructors may assign these and other Pre-Lab Quiz questions using Mastering A&P™

1. Which of the following processes does *not* occur during inspiration?
  - a. diaphragm moves to a flattened position
  - b. gas pressure inside the lungs is lowered
  - c. inspiratory muscles relax
  - d. size of thoracic cavity increases
2. During normal quiet breathing, about \_\_\_\_\_ ml of air moves into and out of the lungs with each breath.
 

a. 250	c. 1000
b. 500	d. 2000
3. Circle True or False. The neural centers that control respiratory rhythm and maintain a rate of 12–18 respirations per minute are located in the medulla and thalamus.
4. The carbonic acid–bicarbonate buffer system stabilizes arterial blood pH at:
 

a. $2.0 \pm 1.00$	c. $6.2 \pm 0.07$
b. $7.4 \pm 0.02$	d. $9.5 \pm 1.15$
5. Circle the correct underlined term. Acids / Bases released into the blood by the body cells tend to lower the pH of the blood and cause it to become acidic.

Go to Mastering A&P™ > Study Area to improve your performance in A&P Lab.



> Lab Tools > Pre-Lab Videos > Spirometry



Instructors may assign new Building Knowledge coaching activities, Pre-Lab Quiz questions, Art Labeling activities, Pre-Lab Video Coaching activities for Operating the Model Lung and Spirometry, Practice Analyzing Lab Practice questions (PAL), Physiology activities, and more using the Mastering A&P™ learn library.

### Materials

- ▶ Model lung (bell jar demonstrator)
- ▶ Tape measure with centimeter divisions (cloth or plastic)
- ▶ Stethoscope
- ▶ Alcohol swabs
- ▶ Spirometer or BIOPAC® equipment: Spirometer, disposable cardboard mouthpieces, nose clips, table (on board) for recording class data, disposable autoclave bag, battery jar containing 70% ethanol solution

Text continues on next page. →

**BIOPAC**® BIOPAC® BSL System with BSL software version 4.0.1 and above (for Windows 10/8.x/7 or Mac OS X 10.9–10.12), data acquisition unit MP36/35 or MP45, PC or Mac computer, BIOPAC® airflow transducer, BIOPAC® calibration syringe, disposable mouthpiece, nose clip, and bacteriological filter.

Instructors using the MP36/35/30 data acquisition unit with BSL software versions earlier than 4.0.1 (for Windows or Mac) will need slightly different channel settings and collection strategies. Instructions for using the older data acquisition unit can be found on MasteringA&P.

- ▶ Paper bag
- ▶ 0.05 M NaOH
- ▶ Phenol red in a dropper bottle
- ▶ 100-ml beakers
- ▶ Distilled water
- ▶ Straws
- ▶ Concentrated HCl and NaOH in dropper bottles
- ▶ 250- and 50-ml beakers
- ▶ Plastic wash bottles containing distilled water
- ▶ pH meter (standardized with buffer of pH 7)
- ▶ Buffer solution (pH 7)
- ▶ Graduated cylinder (100 ml)
- ▶ Glass stirring rod
- ▶ Animal plasma
- ▶ 0.01 M HCl in dropper bottles

**PEX** PhysioEx™ 9.1 Computer Simulation  
Ex. 7 on p. PEX-105

**Note:** Instructions for using PowerLab® equipment can be found on MasteringA&P.

37

The body's trillions of cells require  $O_2$  and give off  $CO_2$  as a waste the body must get rid of. The **respiratory system** provides the link with the external environment for both taking in  $O_2$  and eliminating  $CO_2$ , but it doesn't work alone. The cardiovascular system via its contained blood provides the watery medium for transporting  $O_2$  and  $CO_2$  in the body. Let's look into how the respiratory system carries out its role.

## Mechanics of Respiration

**Pulmonary ventilation**, or **breathing**, consists of two phases: **inspiration**, during which air is taken into the lungs, and **expiration**, during which air passes out of the lungs. As the inspiratory muscles (external intercostals and diaphragm) contract during inspiration, the size of the thoracic cavity increases. The diaphragm moves from its relaxed dome shape to a flattened position, increasing the vertical dimension. The external intercostals lift the rib cage, increasing the anterior-posterior and lateral dimensions (**Figure 37.1**). Because the lungs adhere to the thoracic walls like flypaper owing to the presence of serous fluid in the pleural cavity, the intrapulmonary volume (volume within the lungs) also increases, lowering the air (gas) pressure inside the lungs. The gases then expand to fill the available space, creating a partial vacuum that causes air to flow into the lungs—constituting the act of inspiration. During expiration, the inspiratory muscles relax, and the natural tendency of the elastic lung tissue to recoil decreases the intrathoracic and intrapulmonary volumes. As the gas molecules within the lungs are forced closer together, the intrapulmonary pressure rises to a point higher than atmospheric pressure. This causes gases to flow out of the lungs to equalize the pressure inside and outside the lungs—the act of expiration.

### Activity 1

Instructors may assign a related Pre-Lab Video Coaching Activity using Mastering A&P™

### Operating the Model Lung

Observe the bell jar model of the lungs, which demonstrates the principles involved in gas flows into and out of the lungs. It is a simple apparatus with a hard plastic dome-shaped container called a bell jar (representing the parietal pleura), the interior of the bell jar (representing the thoracic cavity), a rubber membrane (representing the diaphragm), two balloons (representing the lungs), and an inverted Y-shaped tube (representing the trachea and main bronchi).

1. Go to the demonstration area and work the model lung by moving the rubber diaphragm up and down. Notice the *relative* changes in balloon (lung) size as the volume of the thoracic cavity is alternately increased and decreased.
2. Check the appropriate columns in the chart concerning these observations in the review sheet at the end of this exercise.
3. A pneumothorax is a condition in which air has entered the pleural cavity, as with a puncture wound. Simulate a pneumothorax: inflate the balloon lungs by pulling down on the diaphragm. Ask your lab partner to let air into the bottle–thoracic cavity by loosening the rubber stopper.

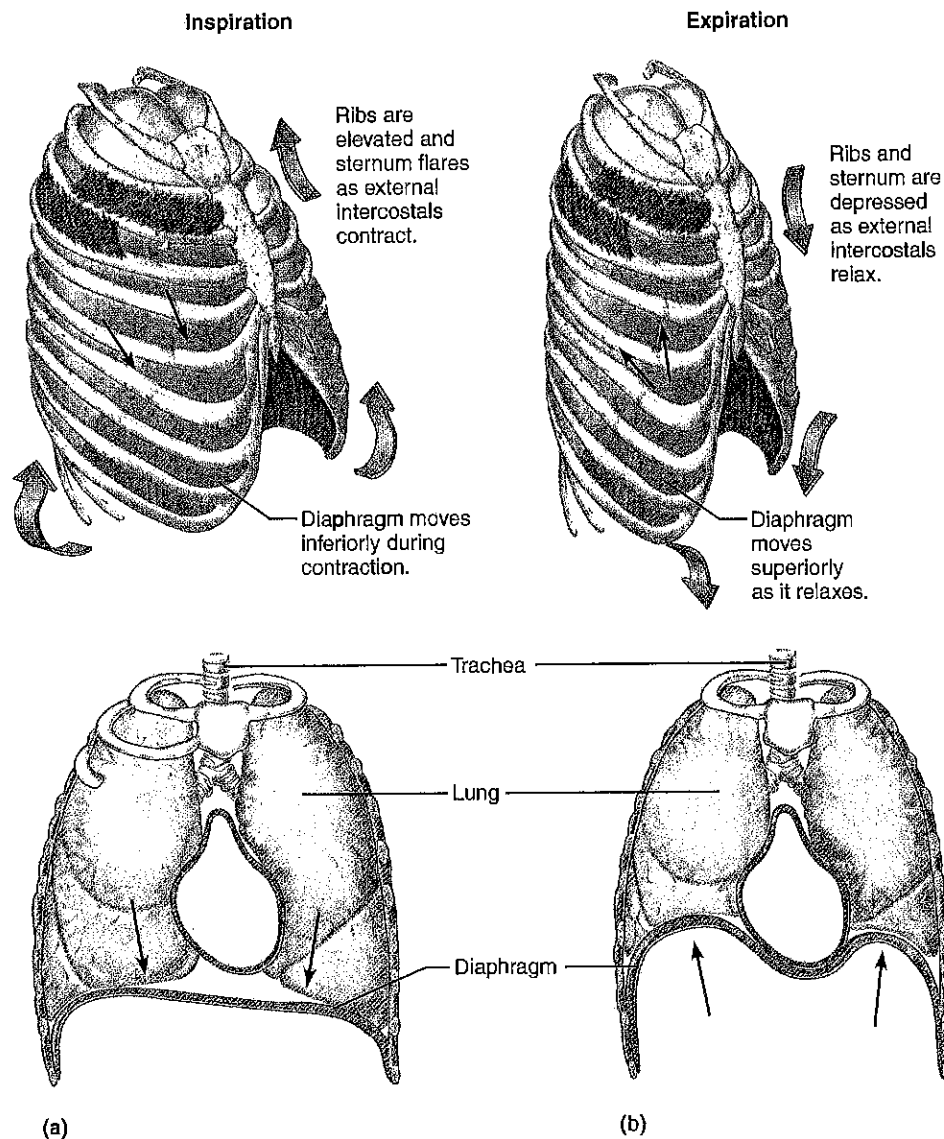
What happens to the balloon lungs?

4. After observing the operation of the model lung, conduct the following tests on your lab partner. Use the tape measure to determine chest circumference by placing the tape around the chest as high up under the armpits as possible. Record the measurements in centimeters in the appropriate space below for each of the conditions.

#### Quiet breathing:

Inspiration \_\_\_\_\_ cm      Expiration \_\_\_\_\_ cm





**Figure 37.1 Rib cage and diaphragm positions during breathing.** (a) At the end of a normal inspiration; ribs elevated, diaphragm contracted. (b) At the end of a normal expiration; ribs depressed, diaphragm relaxed.

#### Forced breathing:

Inspiration \_\_\_\_\_ cm      Expiration \_\_\_\_\_ cm

Do the results coincide with what you expected on the basis  
of what you have learned thus far? \_\_\_\_\_

How does the structural relationship between the balloon-lungs and bottle-thoracic cavity differ from that seen in the human lungs and thoracic cavity?

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## Respiratory Sounds

As air flows in and out of the bronchial tree, it produces two characteristic sounds that can be auscultated with a stethoscope. The **bronchial sounds** are produced by air rushing through the large respiratory passageways (the trachea and the bronchi).

The second sound type, **vesicular breathing sounds**, apparently results from air filling the alveolar sacs and resembles the sound of a rustling of leaves.

## Activity 2

### Auscultating Respiratory Sounds

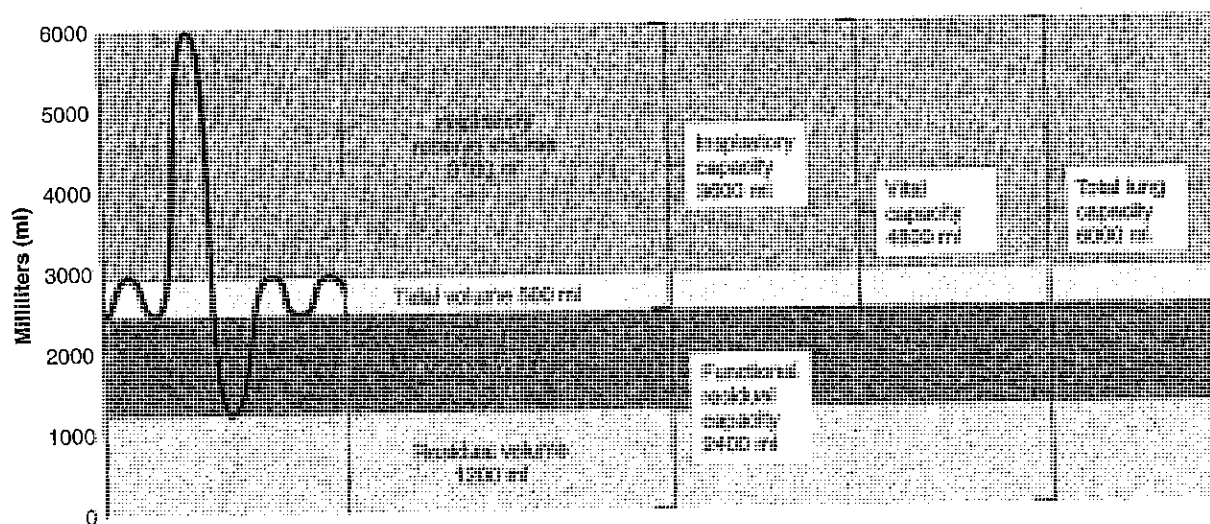
1. Obtain a stethoscope, and clean the earpieces with an alcohol swab. Allow the alcohol to dry before donning the stethoscope.

2. Place the diaphragm of the stethoscope on the throat of the test subject just below the larynx. Listen for bronchial sounds on inspiration and expiration. Move the stethoscope down toward the bronchi until you can no longer hear sounds.

3. Place the stethoscope over the following chest areas and listen for vesicular sounds during respiration (heard primarily during inspiration).

- At various intercostal spaces
- At the *triangle of auscultation* (a small depressed area of the back where the muscles fail to cover the rib cage; located just medial to the inferior part of the scapula)
- Inferior to the clavicle

➤ Diseased respiratory tissue, mucus, or pus can produce abnormal chest sounds such as rales (a rasping sound) and wheezing (a whistling sound). +



(a) Spirographic record for a male

Measurement	Adult male average value	Adult female average value	Description
Tidal volume (TV)	500 ml	500 ml	Amount of air inhaled or exhaled with each breath under resting conditions
Inspiratory capacity (IC)	3600 ml	2400 ml	Maximum amount of air that can be inspired after a normal tidal volume expiration: $IC = TV + IRV$
Functional residual capacity (FRC)	2400 ml	1800 ml	Volume of air remaining in the lungs after a normal tidal volume expiration: $FRC = ERV + RV$
Total lung capacity (TLC)	6000 ml	4200 ml	Maximum amount of air contained in lungs after a maximum inspiratory effort: $TLC = TV + IRV + ERV + RV$
Vital capacity (VC)	4800 ml	3100 ml	Maximum amount of air that can be expired after a maximum inspiratory effort: $VC = TV + IRV + ERV$

(b) Summary of respiratory volumes and capacities for males and females

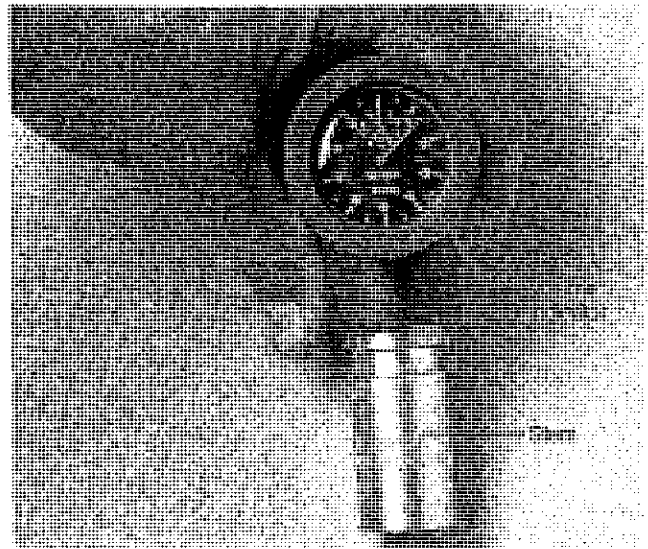
Figure 37.2 Respiratory volumes and capacities.

## Respiratory Volumes and Capacities—Spirometry

A person's size, sex, age, and physical condition produce variations in respiratory volumes. Normal quiet breathing moves about 500 ml of air in and out of the lungs with each breath. As you have seen in the first activity, a person can usually forcibly inhale or exhale much more air than is exchanged in normal quiet breathing. The terms used for the measurable respiratory volumes and capacities are defined and illustrated with an idealized tracing in **Figure 37.2**.

Respiratory volumes can be measured, as in Activities 3 and 4, with an apparatus called a **spirometer**. There are two major types of spirometers, which give comparable results—the hand-held dry, or wheel, spirometers (such as the Wright spirometer illustrated in **Figure 37.3**) and “wet” spirometers, such as the Phipps and Bird spirometer and the Collins spirometer (which is available in both recording and nonrecording varieties). The somewhat more sophisticated wet spirometer consists of a plastic or metal *bell* within a rectangular or cylindrical tank that air can be added to or removed from (**Figure 37.4**, p. 548).

In nonrecording spirometers, an indicator moves as air is *exhaled*, and only expired air volumes can be measured directly. By contrast, recording spirometers allow both inspired and expired gas volumes to be measured.



**Figure 37.3** The Wright handheld dry spirometer. Reset to zero prior to each test.

### Activity 3

Instructors may assign a related Pre-Lab Video Coaching Activity using Mastering A&P™

### Measuring Respiratory Volumes Using Spirometers

The steps for using a nonrecording spirometer and a wet recording spirometer are given separately below.

#### Using a Nonrecording Spirometer

1. Before using the spirometer, count and record the subject's normal respiratory rate. The subject should face away from you as you make the count.

Respirations per minute: \_\_\_\_\_

Now identify the parts of the spirometer you will be using by comparing it to Figure 37.3 or 37.4a. Examine the spirometer volume indicator *before beginning* to make sure you know how to read the scale. Work in pairs, with one person acting as the subject while the other records the data of the volume determinations. Reset the indicator to zero before beginning each trial.

Obtain a disposable cardboard mouthpiece. Prior to inserting the cardboard mouthpiece, clean the valve assembly with an alcohol swab. Then insert the mouthpiece in the open end of the valve assembly (attached to the flexible tube) of the wet spirometer or over the fixed stem of the handheld dry spirometer. Before beginning, the subject should practice exhaling through the mouthpiece without exhaling through the nose, or prepare to use the nose clips. If you are using the handheld spirometer, make sure its dial faces upward so that the volumes can be easily read during the tests.

2. The subject should stand erect during testing. Conduct the test three times for each required measurement. Record the data where indicated in this section, and then find the average volume figure for that respiratory measurement. After you have completed the trials and computed the averages, enter the average values on the table prepared on the board for tabulation of class data,\* and copy all averaged data onto the review sheet at the end of the exercise.

3. Measuring tidal volume (TV). The TV, or volume of air inhaled and exhaled with each quiet, normal respiration, is approximately 500 ml. To conduct the test, inhale a normal breath, and then exhale a normal breath of air into the spirometer mouthpiece. (Do not force the expiration!) Record the volume and repeat the test twice.

trial 1: \_\_\_\_\_ ml

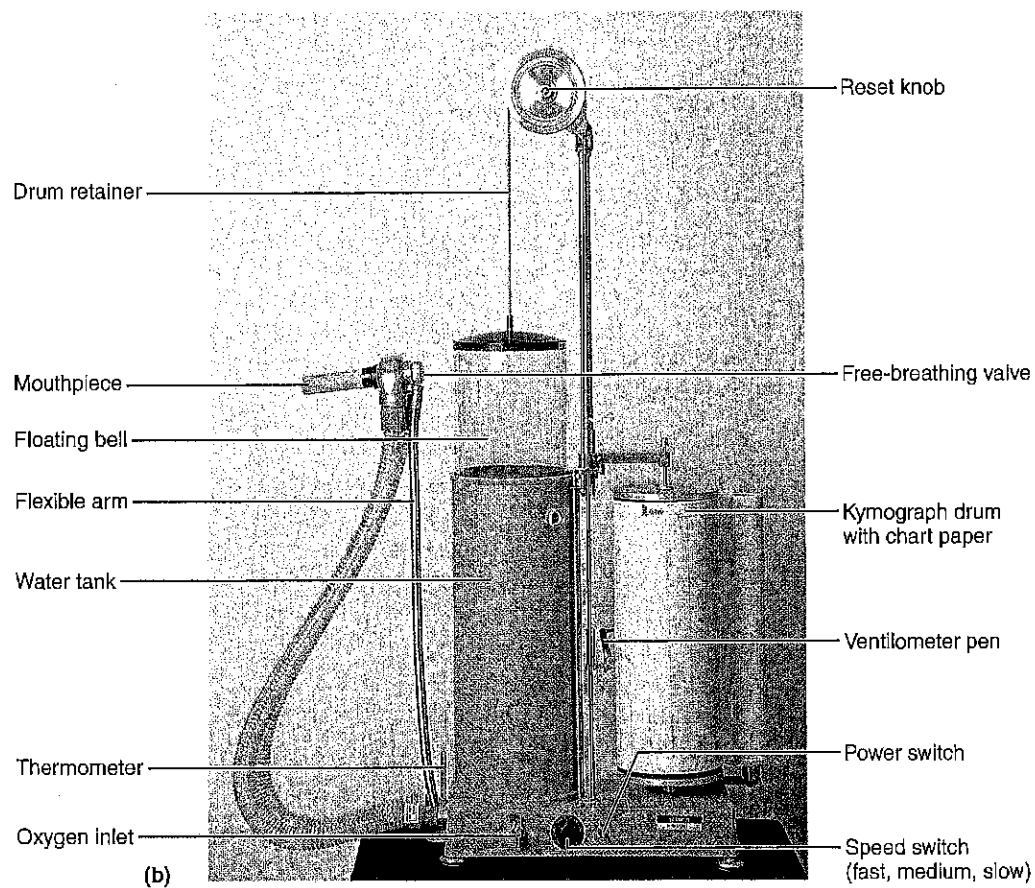
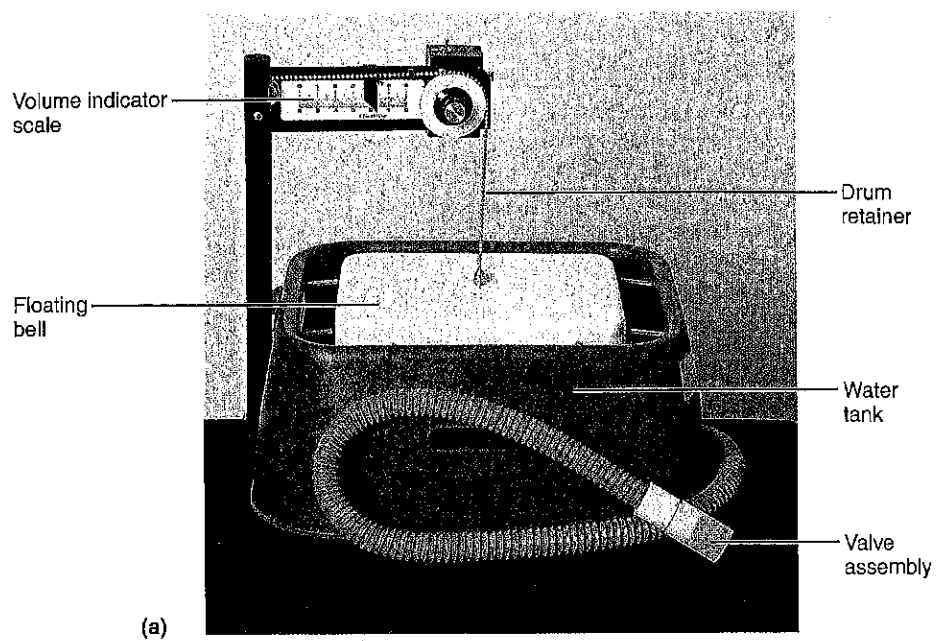
trial 2: \_\_\_\_\_ ml

trial 3: \_\_\_\_\_ ml

average TV: \_\_\_\_\_ ml

**\*Note to the Instructor:** The format of class data tabulation can be similar to that shown here. However, it would be interesting to divide the class into smokers and nonsmokers and then compare the mean average VC and ERV for each group. Such a comparison might help to determine whether smokers are handicapped in any way. It also might be a good opportunity for an informal discussion of the early warning signs of chronic bronchitis and emphysema, which are primarily smokers' diseases.

Text continues on p. 549. →



**Figure 37.4 Wet spirometers.** (a) The Phipps and Bird wet spirometer. (b) The Collins-9L wet recording spirometer.

4. Compute the subject's **minute respiratory volume (MRV)** using the following formula:

$$\text{MRV} = \text{TV} \times \text{respirations/min} = \text{_____ ml/min}$$

5. Measuring expiratory reserve volume (ERV). The ERV is the volume of air that can be forcibly exhaled after a normal expiration. Normally it ranges between 700 and 1200 ml.


Inhale and exhale normally two or three times, then insert the spirometer mouthpiece and exhale forcibly as much of the additional air as you can. Record your results, and repeat the test twice again.

trial 1: \_\_\_\_\_ ml

trial 2: \_\_\_\_\_ ml

trial 3: \_\_\_\_\_ ml

average ERV: \_\_\_\_\_ ml

 ERV is dramatically reduced in conditions in which the elasticity of the lungs is decreased by a chronic obstructive pulmonary disease (COPD) such as **emphysema**. Since energy must be used to *deflate* the lungs in such conditions, expiration is physically exhausting to individuals suffering from COPD. +

6. Measuring vital capacity (VC). The VC, or total exchangeable air of the lungs (the sum of TV + IRV + ERV), normally ranges from 3100 ml to 4800 ml.

Breathe in and out normally two or three times, and then bend forward and exhale all the air possible. Then, as you raise yourself to the upright position, inhale as fully as possible. It is important to *strain* to inhale the maximum amount of air that you can. Quickly insert the mouthpiece, and exhale as forcibly as you can. Record your results and repeat the test twice again.

trial 1: \_\_\_\_\_ ml

trial 2: \_\_\_\_\_ ml

trial 3: \_\_\_\_\_ ml

average VC: \_\_\_\_\_ ml

7. The inspiratory reserve volume (IRV), or volume of air that can be forcibly inhaled following a normal inspiration, can now be computed using the average values obtained for TV, ERV, and VC and plugging them into the equation:

$$\text{IRV} = \text{VC} - (\text{TV} + \text{ERV})$$

Record your calculated IRV: \_\_\_\_\_ ml

The normal IRV range is substantial, ranging from 1900 to 3100 ml. How does your calculated value compare?

\_\_\_\_\_

*Steps 8–10, which provide common directions for use of both nonrecording and recording spirometers, continue (on p. 551) after the wet recording spirometer directions.*

### Using a Wet Recording Spirometer

1. In preparation for recording, familiarize yourself with the spirometer by comparing it to Figure 37.4b.

2. Examine the chart paper, noting that its horizontal lines represent milliliter units. To apply the chart paper to the recording drum, first lift the drum retainer and then remove the kymograph drum. Wrap a sheet of chart paper around the drum, *making sure that the right edge overlaps the left*. Fasten it with tape, and then replace the kymograph drum and lower the drum retainer into its original position in the hole in the top of the drum.

3. Raise and lower the floating bell several times, noting as you do that the *ventilometer pen* moves up and down on the drum. This pen, which writes in black ink, will be used for recording and should be adjusted so that it records in the approximate middle of the chart paper. This adjustment is made by repositioning the floating bell using the *reset knob* on the metal pulley at the top of the spirometer apparatus. The other pen, the *respirometer pen*, which records in red ink, will not be used for these tests and should be moved away from the drum's recording surface.

4. Recording your normal respiratory rate. Clean the nose clips with an alcohol swab. While you wait for the alcohol to air dry, count and record your normal respiratory rate.

Respirations per minute: \_\_\_\_\_

5. Recording tidal volume. After the alcohol has air dried, apply the nose clips to your nose. This will enforce mouth breathing.

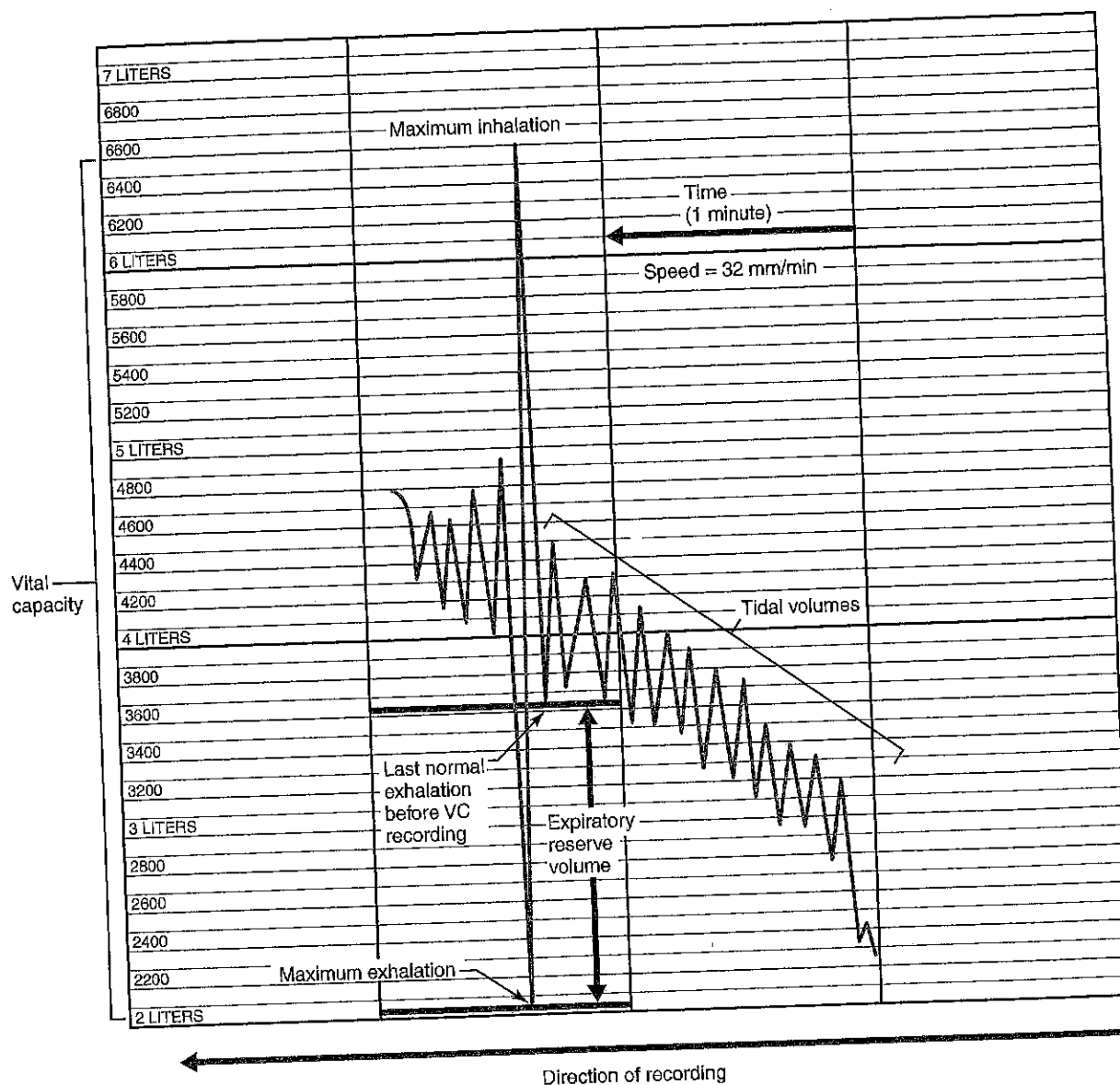
Open the *free-breathing valve*. Insert a disposable cardboard mouthpiece into the end (valve assembly) of the breathing tube, and then insert the mouthpiece into your mouth. Practice breathing for several breaths to get used to the apparatus. At this time, you are still breathing room air.

Set the spirometer switch to **SLOW** (32 mm/min). Close the free-breathing valve, and breathe in a normal manner for 2 minutes to record your tidal volume—the amount of air inspired or expired with each normal respiratory cycle. This recording should show a regular pattern of inspiration-expiration spikes and should gradually move upward on the chart paper. (A downward slope indicates that there is an air leak somewhere in the system—most likely at the mouthpiece.) Notice that on an apparatus using a counterweighted pen (such as the Collins-9L Ventilometer shown in Figure 37.4b), inspirations are recorded by upstrokes and expirations are recorded by downstrokes.\*

6. Recording vital capacity. To record your vital capacity, take the deepest possible inspiration you can and then exhale to the greatest extent possible—really *push* the air out. (The recording obtained should resemble that shown in Figure 37.5). Repeat the vital capacity measurement twice again. Then turn off the spirometer and remove the chart paper from the kymograph drum.

\*If a Collins survey spirometer is used, the situation is exactly opposite: Upstrokes are expirations, and downstrokes are inspirations.

Text continues on next page. →



**Figure 37.5 A typical spirometry recording of tidal volume, inspiratory capacity, expiratory reserve volume, and vital capacity.** At a drum speed of 32 mm/min, each vertical column of the chart represents a time interval of 1 minute. (Note that downstrokes represent exhalations, and upstrokes represent inhalations.)

7. Determine and record your measured, averaged, and corrected respiratory volumes. Because the pressure and temperature inside the spirometer are influenced by room temperature and differ from those in the body, all measured values are to be multiplied by a **BTPS** (body temperature, atmospheric pressure, and water saturation) **factor**. At room temperature, the BTPS factor is typically 1.1 or very close to that value. Hence, you will multiply your average measured values by 1.1 to obtain your corrected respiratory volume values. Copy the averaged and corrected values onto the review sheet at the end of this exercise.

- Tidal volume (TV). Select a typical resting tidal breath recording. Subtract the millimeter value of the trough (exhalation) from the millimeter value of the peak (inspiration). Record this value below as *measured TV 1*. Select

two other TV tracings to determine the TV values for the TV 2 and TV 3 measurements. Then, determine your average TV and multiply it by 1.1 to obtain the BTPS-corrected average TV value.

measured TV 1: \_\_\_\_\_ ml      average TV: \_\_\_\_\_ ml  
 measured TV 2: \_\_\_\_\_ ml      corrected average TV: \_\_\_\_\_ ml  
 measured TV 3: \_\_\_\_\_ ml

Also compute your **minute respiratory volume (MRV)** using the following formula:

$$\text{MRV} = \text{TV} \times \text{respirations/min} = \text{_____ ml/min}$$

- Inspiratory capacity (IC). In the first vital capacity recording, find the expiratory trough immediately preceding the maximal inspiratory peak achieved during vital capacity determination. Subtract the milliliter value of that expiration from the value corresponding to the peak of the maximal inspiration that immediately follows. For example, according to our typical recording (Figure 37.5), these values would be

$$6600 - 3650 = 2950 \text{ ml}$$

Record your computed value and the results of the two subsequent tests on the appropriate lines below. Then calculate the measured and corrected inspiratory capacity averages, and record.

measured IC 1: \_\_\_\_\_ ml      average IC: \_\_\_\_\_ ml  
 measured IC 2: \_\_\_\_\_ ml      corrected  
    average IC: \_\_\_\_\_ ml  
 measured IC 3: \_\_\_\_\_ ml

- Inspiratory reserve volume (IRV). Subtract the corrected average tidal volume from the corrected average for the inspiratory capacity and record below.

$$\text{IRV} = \text{corrected average IC} - \text{corrected average TV}$$

corrected average IRV: \_\_\_\_\_ ml

- Expiratory reserve volume (ERV). Subtract the number of milliliters corresponding to the trough of the maximal expiration obtained during the vital capacity recording from milliliters corresponding to the last *normal* expiration before the VC maneuver is performed. For example, according to our typical recording (Figure 37.5), these values would be

$$3650 \text{ ml} - 2050 \text{ ml} = 1600 \text{ ml}$$

Record your measured and averaged values (three trials) below.

measured ERV 1: \_\_\_\_\_ ml      average ERV: \_\_\_\_\_ ml  
 measured ERV 2: \_\_\_\_\_ ml      corrected average ERV:  
 measured ERV 3: \_\_\_\_\_ ml      \_\_\_\_\_ ml

- Vital capacity (VC). Add your corrected values for ERV and IC to obtain the corrected average VC. Record below and on the review sheet at the end of this exercise.

corrected average VC: \_\_\_\_\_ ml

Now continue with step 8 (below) whether you are following the procedure for the nonrecording or recording spirometer.

- Figure out how closely your measured average vital capacity volume compares with the *predicted values* for someone your age, sex, and height. Obtain the predicted value either from the following equation or the appropriate table (see your instructor for the printed table). Notice that you will have to convert your height in inches to centimeters (cm) to find the corresponding value. This is easily done by multiplying your height in inches by 2.54.

Computed height: \_\_\_\_\_ cm

$$\text{Male VC} = (0.052) H - (0.022) A - 3.60$$

$$\text{Female VC} = (0.041) H - (0.018) A - 2.69$$

Note: (VC) = vital capacity in liters, (H) = height in centimeters, and (A) = age in years.

Predicted VC (obtained from the equation or appropriate table):

\_\_\_\_\_ ml

Use the following equation to compute your VC as a percentage of the predicted VC value:

$$\% \text{ of predicted VC} = \left( \frac{\text{average VC}}{\text{predicted VC}} \right) \times 100$$

% predicted VC value: \_\_\_\_\_ %

- Computing residual volume. A respiratory volume that cannot be experimentally demonstrated here is the residual volume (RV). RV is the amount of air remaining in the lungs after a maximal expiratory effort. The presence of residual air (usually about 1200 ml) that cannot be voluntarily flushed from the lungs is important because it allows gas exchange to go on continuously—even between breaths.

Although the residual volume cannot be measured directly, it can be approximated by using one of the following factors:

For ages 16–34    Factor = 0.250

For ages 35–49    Factor = 0.305

For ages 50–69    Factor = 0.445

Compute your predicted RV using the following equation:

$$\text{RV} = \text{VC} \times \text{factor}$$



- Recording is finished for this subject. Before continuing with the next member of your group:

- Dispose of used cardboard mouthpieces in the autoclave bag.
- Swish the valve assembly (if removable) in the 70% ethanol solution, then rinse with tap water.
- Put a fresh mouthpiece into the valve assembly (or on the stem of the handheld spirometer). Using the procedures outlined above, measure and record the respiratory volumes for all members of your group.

# SURVEY SPIROMETER CHART PAPER

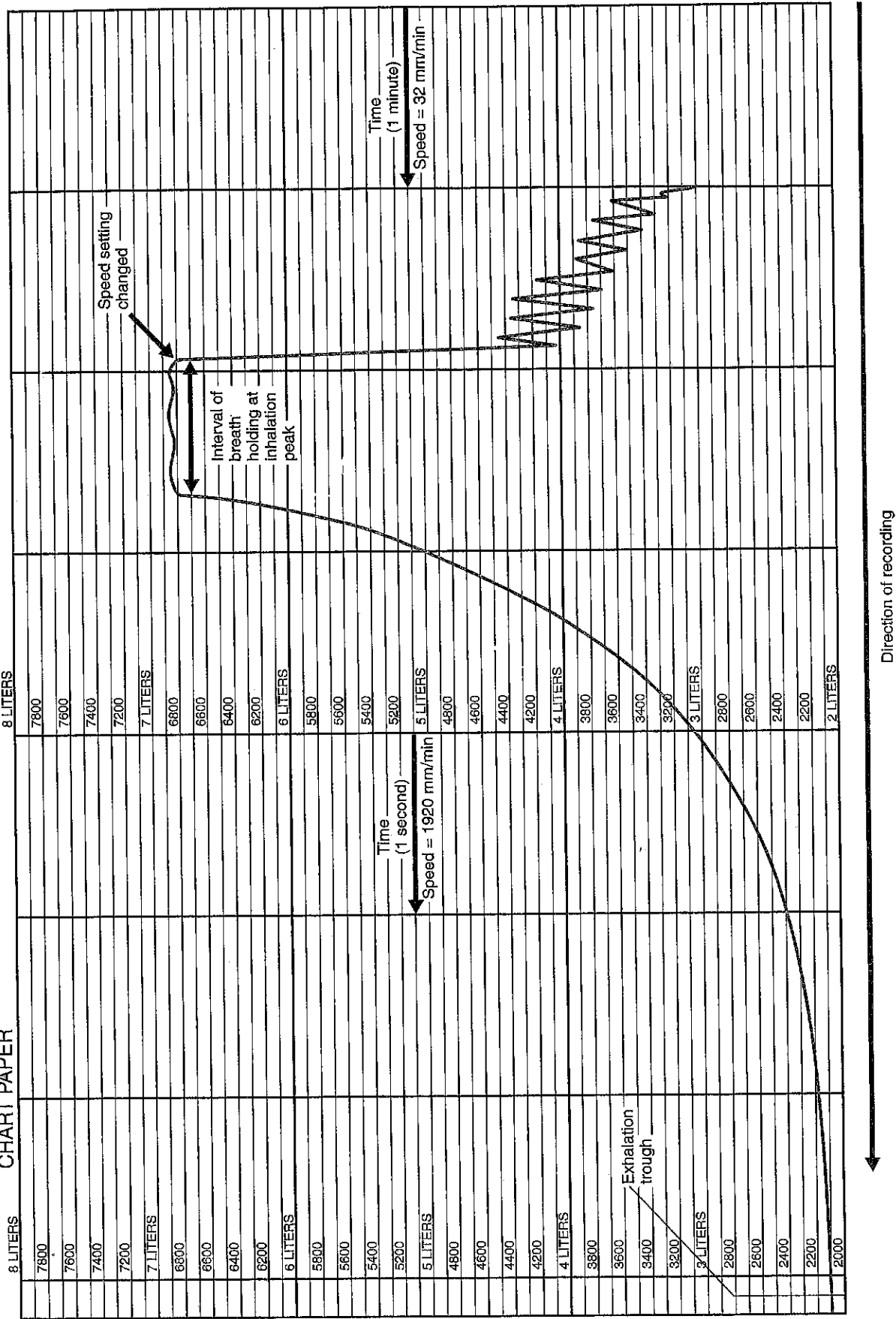


Figure 37.6 A recording of the forced vital capacity (FVC) and forced expiratory volume (FEV) or timed vital capacity test.



## Forced Expiratory Volume (FEV<sub>T</sub>) Measurement

Though not really diagnostic, pulmonary function tests can help the clinician distinguish between obstructive and restrictive pulmonary diseases. (In obstructive disorders, such as chronic bronchitis and asthma, airway resistance is increased, whereas in restrictive diseases, such as polio and tuberculosis, total lung capacity declines.) Two highly useful pulmonary function tests used for this purpose are the FVC and the FEV<sub>T</sub> (Figure 37.6).

The **FVC** (forced vital capacity) measures the amount of gas expelled when the subject takes the deepest possible

breath and then exhales forcefully and rapidly. This volume is reduced in those with restrictive pulmonary disease. The **FEV<sub>T</sub>** (forced expiratory volume) involves the same basic testing procedure, but it specifically looks at the percentage of the vital capacity that is exhaled during specific time intervals of the FVC test. FEV<sub>1</sub>, for instance, is the amount exhaled during the first second. Healthy individuals can expire 75% to 85% of their FVC in the first second. The FEV<sub>1</sub> is low in people with obstructive disease.

### Activity 4

#### Measuring the FVC and FEV<sub>1</sub>

Directions provided here for the FEV<sub>T</sub> determination apply only to the recording spirometer.

1. Prepare to make your recording as described for the recording spirometer, steps 1–5 (on p. 549).
2. At a signal agreed upon by you and your lab partner, take the deepest inspiration possible and hold it for 1 to 2 seconds. As the inspiratory peak levels off, your partner is to change the drum speed to **FAST** (1920 mm/min) so that the distance between the vertical lines on the chart represents 1 second.
3. Once the drum speed is changed, exhale as much air as you can as rapidly and forcibly as possible.
4. When the tracing plateaus (bottoms out), stop recording and determine your FVC. Subtract the milliliter reading in the expiration trough (the bottom plateau) from the preceding inhalation peak (the top plateau). Record this value.

FVC: \_\_\_\_\_ ml

5. Prepare to calculate the FEV<sub>1</sub>. Draw a vertical line intersecting with the spirogram tracing at the precise point that

exhalation began. Identify this line as *line 1*. From line 1, measure 32 mm horizontally to the left, and draw a second vertical line. Label this as *line 2*. The distance between the two lines represents 1 second, and the volume exhaled in the first second is read where line 2 intersects the spirogram tracing. Subtract that milliliter value from the milliliter value of the inhalation peak (at the intersection of line 1), to determine the volume of gas expired in the first second. According to the values given in the example (Figure 37.6), that figure would be 3400 ml (6800 ml – 3400 ml). Record your measured value below.

Milliliters of gas expired in second 1: \_\_\_\_\_ ml

6. To compute the FEV<sub>1</sub> use the following equation:

$$\text{FEV}_1 = \frac{\text{volume expired in second 1}}{\text{FVC volume}} \times 100\%$$

Record your calculated value below and on the review sheet at the end of this exercise.

FEV<sub>1</sub>: \_\_\_\_\_ % of FVC

### Activity 5

#### Measuring Respiratory Volumes Using BIOPAC®

In this activity, you will measure respiratory volumes using the BIOPAC® airflow transducer. An example of these volumes is demonstrated in the computer-generated spirogram (Figure 37.7, p. 554). Since it is not possible to measure **residual volume (RV)** using the airflow transducer, assume that it is 1.0 liter for each subject, which is a reasonable estimation. Or enter a volume between 1 and 5 liters via Preferences. It is also important to estimate the **predicted vital capacity** of the subject for comparison to the measured value. A rough estimate of the vital capacity in liters (VC) of a subject can be calculated using the following formulas based on height in centimeters (*H*) and age in years (*A*).

$$\text{Male VC} = (0.052)H - (0.022)A - 3.60$$

$$\text{Female VC} = (0.041)H - (0.018)A - 2.69$$

Because many factors besides height and age influence vital capacity, it should be assumed that measured values

up to 20% above or below the calculated predicted value are normal.

#### Setting Up the Equipment

1. Connect the BIOPAC® unit to the computer, and turn the computer **ON**.
2. Make sure the BIOPAC® unit is **OFF**.
3. Plug in the equipment (as shown in Figure 37.8, p. 554).
  - Airflow transducer—CH 1
4. Turn the BIOPAC® unit **ON**.
5. Place a *clean* bacteriological filter onto the end of the BIOPAC® calibration syringe (as shown in Figure 37.9, p. 554). Since the subject will be blowing through a filter, it is necessary to use a filter for calibration.

Text continues on next page. →

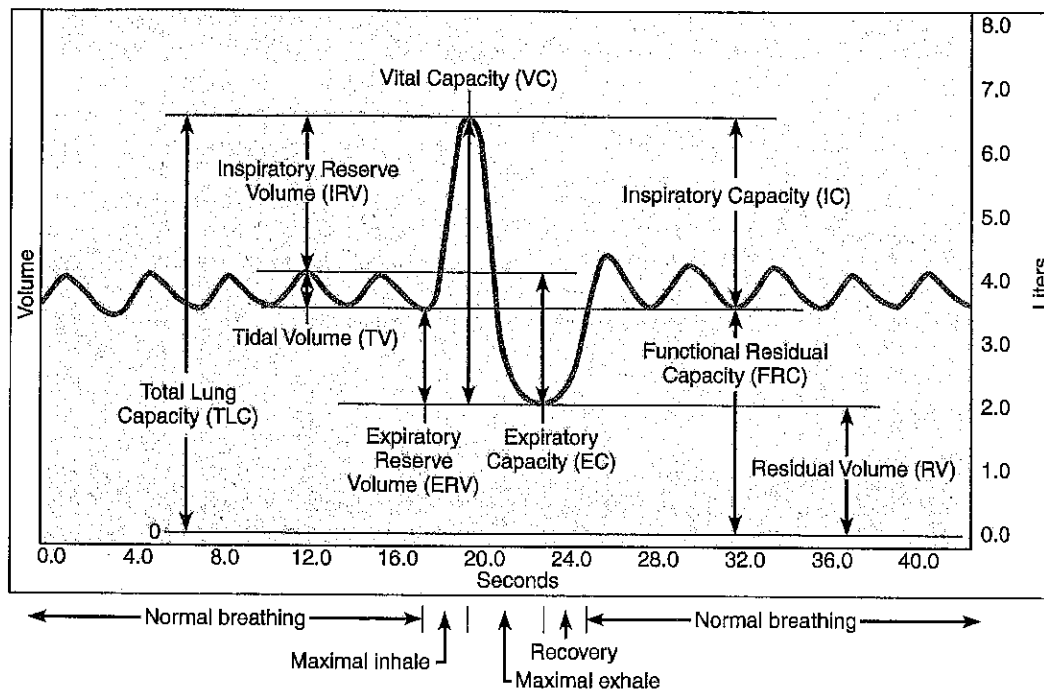


Figure 37.7 Example of a computer-generated spirogram.

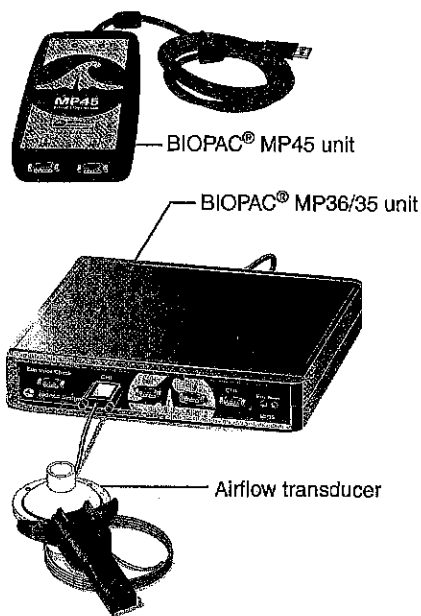


Figure 37.8 Setting up the BIOPAC® equipment. Plug the airflow transducer into Channel 1. Transducer is shown plugged into the MP36/35 unit.

6. Start the Biopac Student Lab program on the computer by double-clicking the icon on the desktop or by following your instructor's guidance.
7. Select lesson **L12-Pulmonary Function-1** from the menu, and click **OK**.
8. Type in a filename that will save this subject's data on the computer hard drive. You may want to use the subject's last

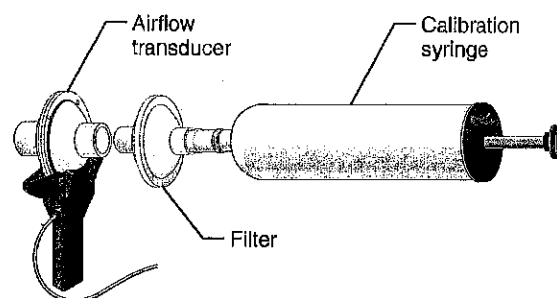


Figure 37.9 Placement of the calibration syringe and filter assembly onto the airflow transducer for calibration.

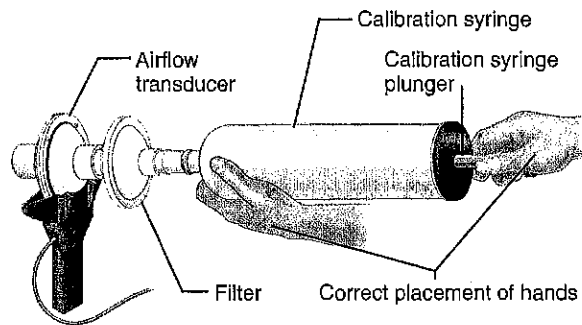
name followed by Pulmonary Function (PF)-1 (for example, SmithPF-1), then click **OK**.

At the start of the lesson, you have the option to record the subject's gender, age, and height. Domestic or metric units may be selected. These details are displayed in the Journal following the lesson.

### Calibrating the Equipment

Two precautions must be followed:

- The airflow transducer is sensitive to gravity, so it must be held directly parallel to the ground during calibration and recording.
- Do not hold onto the airflow transducer when it is attached to the calibration syringe and filter assembly—the syringe tip is likely to break. (See Figure 37.10 for the proper handling of the calibration assembly). The size of the calibration syringe can be altered via Preferences.



**Figure 37.10** Proper handling of the calibration assembly.

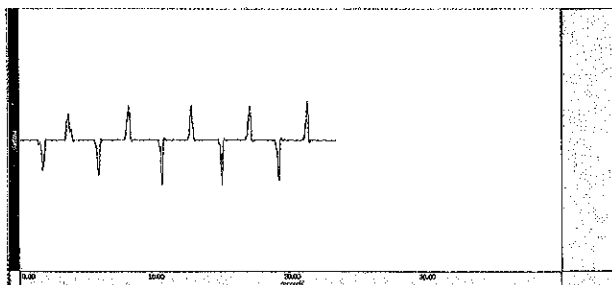
1. Hold the airflow transducer upright and still, making sure no air is flowing through it, and click **Calibrate**. This part of the calibration will stop automatically after 8 seconds.
2. Verify that the airflow data is flat and centered. If necessary, click **Redo Calibration**. If airflow data is satisfactory, click **Continue**.
3. Insert the calibration syringe and filter assembly into the airflow transducer on the side labeled "Inlet." Make sure the calibration syringe plunger is pulled all the way out.
4. The final part of the calibration involves simulating five breathing cycles using the calibration syringe. A single cycle consists of:
  - Pushing the plunger in (taking 1 second for this stroke)
  - Waiting for 2 seconds
  - Pulling the plunger out (taking 1 second for this stroke)
  - Waiting 2 seconds

*Remember to hold the airflow transducer directly parallel to the ground during calibration and recording.*

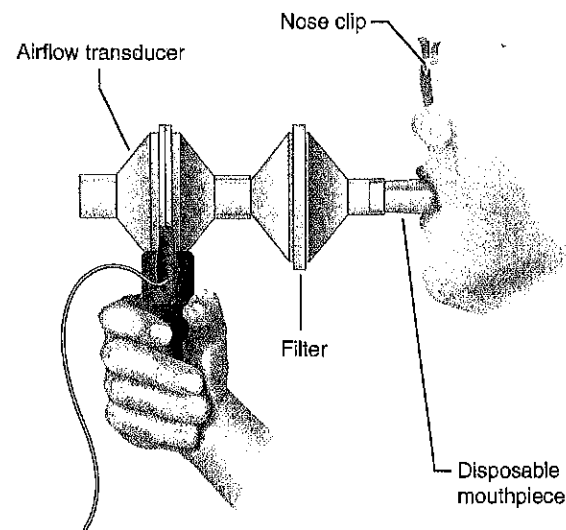
5. When ready to perform this second stage of the calibration, click **Calibrate**. After you have completed five cycles, click **End Calibration**.

6. Observe the data, which should look similar to that in **Figure 37.11**.

- If the data look very different, click **Redo Calibration** and repeat the steps above.
- If the data look similar, gently remove the calibration syringe, leaving the air filter attached to the transducer. Proceed to the next section by clicking **Continue**.



**Figure 37.11** Example of calibration data.



**Figure 37.12** Proper equipment setup for recording data.

### Recording the Data

Follow these procedures precisely, because the airflow transducer is very sensitive. Hints to obtain the best data:

- Always insert air filter on, and breathe through, the transducer side labeled **Inlet**.
- Keep the airflow transducer upright at all times.
- The subject should not look at the computer screen during the recording of data.
- The subject must keep a nose clip on throughout the experiment.

1. Insert a clean mouthpiece into the air filter that is already attached to the airflow transducer. Be sure that the filter is attached to the **Inlet** side of the airflow transducer.

2. Write the name of the subject on the mouthpiece and air filter. For safety purposes, each subject must use his or her own air filter and mouthpiece.

3. The subject should now place the nose clip on the nose (or hold the nose very tightly with finger pinch), wrap the lips tightly around the mouthpiece, and begin breathing normally through the airflow transducer (as shown in **Figure 37.12**).

4. When prepared, the subject will complete the following unbroken series with nose plugged and lips tightly sealed around the mouthpiece:

- Take five normal breaths (1 breath = inhale + exhale).
- Inhale as much air as possible.
- Exhale as much air as possible.
- Take five normal breaths.

5. When the subject is prepared to proceed, click **Record** on the first normal inhalation and proceed. When the subject finishes the last exhalation at the end of the series, click **Stop**.

*Text continues on next page. →*

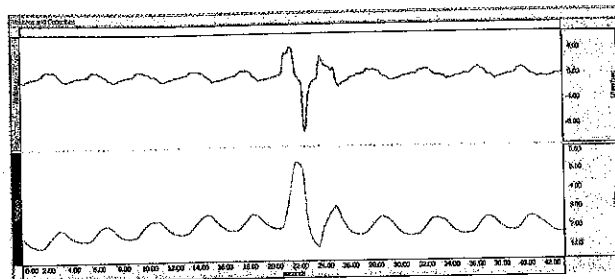


Figure 37.13 Example of pulmonary data.

6. Observe the data, which should look similar to that in Figure 37.13.

- If the data look very different, click **Redo** and repeat the steps above. Be certain that the lips are sealed around the mouthpiece, the nose is completely plugged, and the transducer is upright.
  - If the data look similar, proceed to step 7.
7. When finished, click **Done**. A pop-up window will appear.
- Click **Yes** if you are done and want to stop recording.
  - To record from another subject, select **Record from another Subject** and return to step 1 under Recording the Data. You will not need to redo the calibration procedure for the second subject.
  - If continuing to the Data Analysis section, select **Analyze current data file** and proceed to step 2 of the Data Analysis section.

### Data Analysis

1. If just starting the BIOPAC® program to perform data analysis, enter **Review Saved Data** mode and choose the file with the subject's PF data (for example, SmithPF-1).

2. Observe how the channel numbers are designated: CH 1—Airflow; CH 2—Volume.

3. To set up the display for optimal viewing, hide CH 1—Airflow. To do this, hold down the Alt key (PC) or Option key (Mac) while using the cursor to click the Channel box 1 (the small box with a 1 at the upper left of the screen).

4. To analyze the data, set up the first pair of channel/ measurement boxes at the top of the screen by selecting the following channel and measurement type from the drop-down menu:

Channel	Measurement	Data
CH 2	P-P	Volume

5. Take two measures for an averaged TV calculation: Use the arrow cursor and click the I-beam cursor box on the lower right side of the screen to activate the "area selection" function. Using the activated I-beam cursor, highlight the inhalation of cycle 3 (as shown in Figure 37.14).

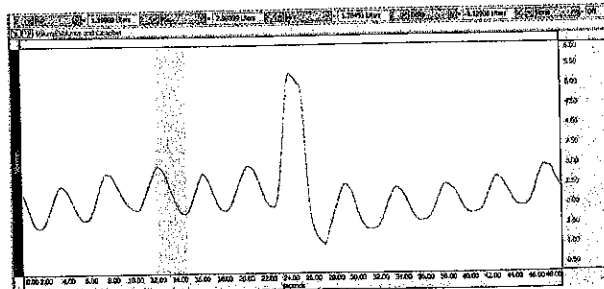


Figure 37.14 Highlighting data for the inhalation of the third breath.

### Activity 5: Pulmonary Measurements

Volumes	Measurements (liters)
Tidal volume (TV)	
Inspiratory reserve volume (IRV)	
Expiratory reserve volume (ERV)	
Vital capacity (VC)	
Residual volume (RV)	1.00 (assumed)

6. The computer automatically calculates the **P-P** value for the selected area. This measure is the difference between the highest and lowest values in the selected area. Note the value. Use the I-beam cursor to select the exhalation of cycle 3, and note the **P-P** value.

7. Calculate the average of the two **P-P** values. This represents the **tidal volume** (in liters). Record the value in the **Activity 5: Pulmonary Measurements chart** above.

8. Use the I-beam cursor to measure the IRV: Highlight from the peak of maximum inhalation to the peak of the last normal inhalation just before it (see Figure 37.7 for an example of IRV). Observe and record the  $\Delta$  (**Delta**) value in the chart (to the nearest 0.01 liter).

9. Use the I-beam cursor to measure the ERV: Highlight from the trough of maximum exhalation to the trough of the last normal exhalation just before it (see Figure 37.7 for an example of ERV). Observe and record the  $\Delta$  (**Delta**) value in the chart (to the nearest 0.01 liter).

10. Last, use the I-beam cursor to measure the VC: Highlight from the trough of maximum exhalation to the peak of maximum inhalation (see Figure 37.7 for an example of VC). Observe and record the **P-P** value in the chart (to the nearest 0.01 liter).

11. When finished, choose **File menu** and **Quit** to close the program.

Using the measured data, calculate the capacities listed in the **Activity 5: Calculated Pulmonary Capacities chart**.

**Activity 5: Calculated Pulmonary Capacities**

Capacity	Formula	Calculation (liters)
Inspiratory capacity (IC)	$= TV + IRV$	
Functional residual capacity (FRC)	$= ERV + RV$	
Total lung capacity (TLC)	$= TV + RV + IRV + ERV$	

Use the formula in the introduction of this activity (p. 553) to calculate the predicted vital capacity of the subject based on height and age.

Predicted VC: \_\_\_\_\_ liters


How does the measured vital capacity compare to the predicted vital capacity?

Describe why height and weight might correspond with a subject's VC.

What other factors might influence the VC of a subject?

**Factors Influencing Rate and Depth of Respiration**

The neural centers that control respiratory rhythm and maintain a rate of 12 to 18 respirations/min are located in the medulla and pons. On occasion, input from the stretch receptors in the lungs (via the vagus nerve to the medulla) modifies the respiratory rate, as in cases of extreme overinflation of the lungs (Hering-Breuer reflex).

 Death occurs when medullary centers are completely suppressed, as from an overdose of sleeping pills or gross overindulgence in alcohol, and respiration ceases completely. +

Although the neural centers initiate the basic rhythm of breathing, there is no question that physical phenomena such as talking, yawning, coughing, and exercise can modify the rate and depth of respiration. So, too, can chemical factors such as changes in oxygen or carbon dioxide concentrations in the blood or fluctuations in blood pH. This is especially important in initiating breathing in a newborn. The buildup of carbon dioxide in the blood triggers the baby's first breath. The experimental sequence in Activity 6 is designed to test the relative importance of various physical and chemical factors in the process of respiration.

**Activity 6****Visualizing Respiratory Variations**

In this activity, you will count the respiratory rate of the subject visually by observing the movement of the chest or abdomen.

1. Record quiet breathing for 1 minute with the subject in a sitting position.

Breaths per minute: \_\_\_\_\_

2. Record the subject's breathing as he or she performs activities from the following list. Record your results on the review sheet at the end of this exercise.

talking	swallowing water
yawning	coughing
laughing	lying down
standing	running in place
doing a math problem (concentrating)	

3. Without recording, have the subject breathe normally for 2 minutes, then inhale deeply and hold his or her breath for as long as he or she can.

Breath-holding interval: \_\_\_\_\_ sec

As the subject exhales, record the recovery period (time to return to normal breathing—usually slightly over 1 minute):

Time of recovery period: \_\_\_\_\_ sec

Did the subject have the urge to inspire or expire during breath holding? \_\_\_\_\_

Without recording, repeat the above experiment, but this time exhale completely and forcefully *after* taking the deep breath.

Breath-holding interval \_\_\_\_\_ sec

Text continues on next page. →

Time of recovery period \_\_\_\_\_ sec

Did the subject have the urge to inspire or expire? \_\_\_\_\_


Explain the results. (*Hint: The vagus nerve is the sensory nerve of the lungs and plays a role here.*)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. During the next task, a sensation of dizziness may develop. As the carbon dioxide is washed out of the blood by hyperventilation, the blood pH increases, leading to a decrease in blood pressure and reduced cerebral circulation.

 If you have a history of dizzy spells or a heart condition, do not perform this task.

The subject may experience a lack of desire to breathe after forced breathing is stopped. If the period of breathing cessation—apnea—is extended, cyanosis of the lips may occur.

Have the subject hyperventilate (breathe deeply and forcefully at the rate of 1 breath/4 sec) for about 30 sec.

Is the respiratory rate after hyperventilation faster or slower than during normal quiet breathing?

\_\_\_\_\_

5. Repeat the hyperventilation step. After hyperventilation, the subject is to hold his or her breath as long as possible.

Breath-holding interval: \_\_\_\_\_

Can the breath be held for a longer or shorter time after hyperventilating?

\_\_\_\_\_

6. Without recording, have the subject breathe into a paper bag for 3 minutes, then record breathing movements.

\_\_\_\_\_



During the bag-breathing exercise, the subject's partner should watch the subject carefully.

Is the breathing rate faster or slower than that recorded during normal quiet breathing?

\_\_\_\_\_

After hyperventilating? \_\_\_\_\_

7. Run in place for 2 minutes, and then have your partner determine how long you can hold your breath.

Breath-holding interval: \_\_\_\_\_ sec

8. To prove that respiration has a marked effect on circulation, conduct the following test. Have your lab partner record the rate and relative force of your radial pulse before you begin.

Rate: \_\_\_\_\_ beats/min Relative force: \_\_\_\_\_

Inspire forcibly. Immediately close your mouth and nose to retain the inhaled air, and then make a forceful and prolonged expiration. Your lab partner should observe and record the condition of the blood vessels of your neck and face, and again immediately palpate the radial pulse.

Observations: \_\_\_\_\_

Radial pulse: \_\_\_\_\_ beats/min Relative force: \_\_\_\_\_

Explain the changes observed. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

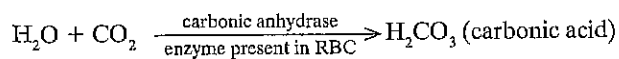


Dispose of the paper bag in the autoclave bag. Observation of the test results should enable you to determine which chemical factor, carbon dioxide or oxygen, has the greatest effect on modifying the respiratory rate and depth.

## Role of the Respiratory System in Acid-Base Balance of Blood

Blood pH must be relatively constant for the cells of the body to function optimally. The carbonic acid–bicarbonate buffer system of the blood is extremely important because it helps stabilize arterial blood pH at  $7.4 \pm 0.02$ .

When carbon dioxide diffuses into the blood from the tissue cells, much of it enters the red blood cells, where it combines with water to form carbonic acid (**Figure 37.15**):



Some carbonic acid is also formed in the plasma, but that reaction is very slow because of the lack of the carbonic anhydrase enzyme. Shortly after it forms, carbonic acid dissociates

to release bicarbonate ( $\text{HCO}_3^-$ ) and hydrogen ions ( $\text{H}^+$ ). The hydrogen ions that remain in the cells are neutralized when they combine with hemoglobin molecules. If they were not neutralized, the intracellular pH would become very acidic as  $\text{H}^+$  ions accumulated. The bicarbonate ions diffuse out of the red blood cells into the plasma, where they become part of the carbonic acid–bicarbonate buffer system. As  $\text{HCO}_3^-$  follows its concentration gradient into the plasma, an electrical imbalance develops in the RBCs that draws  $\text{Cl}^-$  into them from the plasma. This exchange phenomenon is called the *chloride shift*.

Acids (more precisely,  $\text{H}^+$ ) released into the blood by the body cells tend to lower the pH of the blood and to cause it to

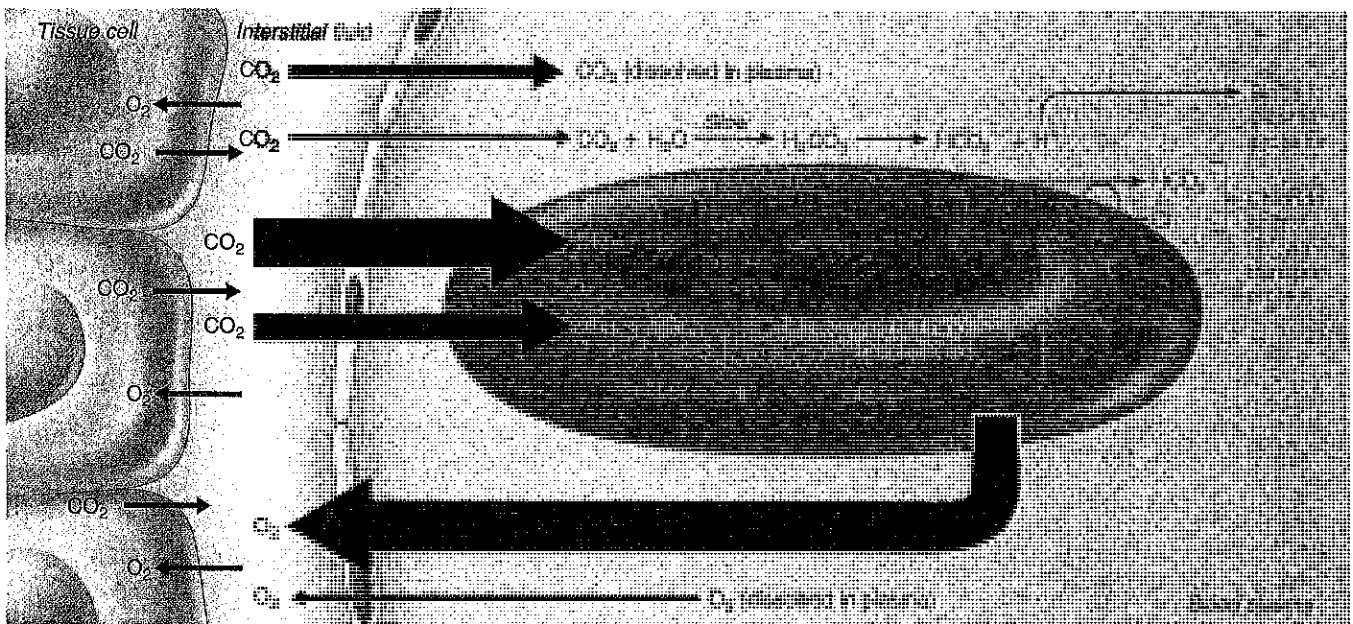
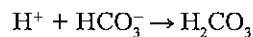
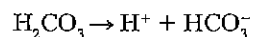


Figure 37.15 Oxygen release and carbon dioxide pickup at the tissues.

become acidic. On the other hand, basic substances that enter the blood tend to cause the blood to become more alkaline and the pH to rise. Both of these tendencies are resisted in large part by the carbonic acid–bicarbonate buffer system. If the  $H^+$  concentration in the blood begins to increase, the  $H^+$  ions combine with bicarbonate ions to form carbonic acid (a weak acid that does not tend to dissociate at physiological or acid pH) and are thus removed.



Likewise, as blood  $H^+$  concentration drops below what is desirable and blood pH rises,  $H_2CO_3$  dissociates to release bicarbonate ions and  $H^+$  ions to the blood.



The released  $H^+$  lowers the pH again. The bicarbonate ions, being *weak* bases, are poorly functional under alkaline conditions and have little effect on blood pH unless and until blood pH drops toward acid levels.

In the case of excessively slow or shallow breathing (hypoventilation) or fast deep breathing (hyperventilation), the amount of carbonic acid in the blood can be greatly modified—increasing dramatically during hypoventilation and decreasing substantially during hyperventilation. In either situation, if the buffering ability of the blood is inadequate, respiratory acidosis or alkalosis can result. Therefore, maintaining the normal rate and depth of breathing is important for proper control of blood pH.

## Activity 7

### Demonstrating the Reaction Between Carbon Dioxide (in Exhaled Air) and Water

1. Fill a beaker with 100 ml of distilled water.
2. Add 5 ml of 0.05 M NaOH and five drops of phenol red. Phenol red is a pH indicator that turns yellow in acidic solutions.
3. Blow through a straw into the solution.

What do you observe?

What chemical reaction is taking place in the beaker?

4. Discard the straw in the autoclave bag.

## Activity 8

### Observing the Operation of Standard Buffers

1. A **buffer** is a molecule or molecular system that stabilizes the pH of a solution. To observe the action of a buffer system, obtain five 250-ml beakers and a wash bottle containing distilled water. Set up the following experimental samples:

Beaker 1:  
(150 ml distilled water) pH \_\_\_\_\_

Beaker 2:  
(150 ml distilled water and  
1 drop concentrated HCl) pH \_\_\_\_\_

Beaker 3:  
(150 ml distilled water and  
1 drop concentrated NaOH) pH \_\_\_\_\_

Beaker 4:  
(150 ml standard buffer solution  
[pH 7] and 1 drop concentrated HCl) pH \_\_\_\_\_

Beaker 5:  
(150 ml standard buffer solution  
[pH 7] and 1 drop concentrated NaOH) pH \_\_\_\_\_

2. Using a pH meter standardized with a buffer solution of pH 7, determine the pH of the contents of each beaker and record above. After *each and every* pH recording, turn the pH meter switch to **STANDBY**, and rinse the electrodes thoroughly with a stream of distilled water from the wash bottle.

3. Add 3 more drops of concentrated HCl to beaker 4, stir, and record the pH: \_\_\_\_\_

4. Add 3 more drops of concentrated NaOH to beaker 5, stir, and record the pH: \_\_\_\_\_

How successful was the buffer solution in resisting pH changes when a strong acid (HCl) or a strong base (NaOH) was added?

\_\_\_\_\_

## Activity 9

### Exploring the Operation of the Carbonic Acid–Bicarbonate Buffer System

To observe the ability of the carbonic acid–bicarbonate buffer system of blood to resist pH changes, perform the following simple experiment.

1. Obtain two small beakers (50 ml), animal plasma, graduated cylinder, glass stirring rod, and a dropper bottle of 0.01 M HCl. Using the pH meter standardized with the buffer solution of pH 7.0, measure the pH of the animal plasma. Use only enough plasma to allow immersion of the electrodes and measure the volume used carefully.

pH of the animal plasma: \_\_\_\_\_

2. Add 2 drops of the 0.01 M HCl solution to the plasma; stir and measure the pH again.

pH of plasma plus 2 drops of HCl: \_\_\_\_\_

3. Turn the pH meter switch to **STANDBY**, rinse the electrodes, and then immerse them in a quantity of distilled water

(pH 7) exactly equal to the amount of animal plasma used. Measure the pH of the distilled water.

pH of distilled water: \_\_\_\_\_

4. Add 2 drops of 0.01 M HCl, swirl, and measure the pH again.

pH of distilled water plus the two drops of HCl: \_\_\_\_\_

Is the plasma a good buffer? \_\_\_\_\_

What component of the plasma carbonic acid–bicarbonate buffer system was acting to counteract a change in pH when HCl was added?

\_\_\_\_\_



# 37

## REVIEW SHEET

# Respiratory System Physiology



Instructors may assign a portion of the Review Sheet questions using Mastering A&P™

Name \_\_\_\_\_ Lab Time/Date \_\_\_\_\_

### Mechanics of Respiration

1. For each of the following cases, check the column appropriate to your observations on the operation of the model lung.

Change	Diaphragm pushed up		Diaphragm pulled down	
	Increased	Decreased	Increased	Decreased
In internal volume of the bell jar (thoracic cavity)				
In internal pressure of the bell jar				
In the size of the balloons (lungs)				

2. Base your answers to the following on your observations in question 1.

Under what internal conditions of the thoracic cavity does air tend to flow into the lungs? \_\_\_\_\_

Under what internal conditions of the thoracic cavity does air tend to flow out of the lungs? Explain why this is so. \_\_\_\_\_

3. Activation of the diaphragm and the external intercostal muscles begins the inspiratory process. What effect does contraction of these muscles have on thoracic volume, and how is this accomplished? \_\_\_\_\_

4. What was the approximate increase in diameter of chest circumference during a quiet inspiration? \_\_\_\_\_ cm  
During forced inspiration? \_\_\_\_\_ cm

5. What temporary physiological advantage is created by the substantial increase in chest circumference during forced inspiration? \_\_\_\_\_

## Respiratory Sounds

6. Which of the respiratory sounds is heard during both inspiration and expiration? \_\_\_\_\_

Which is heard primarily during inspiration? \_\_\_\_\_

7. Where did you best hear the vesicular respiratory sounds? \_\_\_\_\_

## Respiratory Volumes and Capacities—Spirometry or BIOPAC®

8. Write the respiratory volume term and the normal value that is described by the following statements.

Volume of air present in the lungs after a forceful expiration: \_\_\_\_\_

Volume of air that can be expired forcibly after a normal expiration: \_\_\_\_\_

Volume of air that is breathed in and out during a normal respiration: \_\_\_\_\_

Volume of air that can be inspired forcibly after a normal inspiration: \_\_\_\_\_

Volume of air corresponding to TV + IRV + ERV: \_\_\_\_\_

9. For the spirometer activities, record experimental respiratory volumes as determined in the laboratory. Corrected values and FEV<sub>1</sub> are for the recording spirometer only.

Average TV: \_\_\_\_\_ ml      Average ERV: \_\_\_\_\_ ml

Corrected value for TV: \_\_\_\_\_ ml      Corrected value for ERV: \_\_\_\_\_ ml

Average IRV: \_\_\_\_\_ ml      Average VC: \_\_\_\_\_ ml

Corrected value for IRV: \_\_\_\_\_ ml      Corrected value for VC: \_\_\_\_\_ ml

MRV: \_\_\_\_\_ ml/min      % predicted VC: \_\_\_\_\_ %

FEV<sub>1</sub>: \_\_\_\_\_ % FVC

For the BIOPAC® activity, record the following experimental respiratory volumes as determined in the laboratory.

TV: \_\_\_\_\_ L      IRV: \_\_\_\_\_ L

ERV: \_\_\_\_\_ L      VC: \_\_\_\_\_ L

10. Explain how you would calculate the IRV assuming that you have measured VC, TV, and ERV. \_\_\_\_\_

11. How did your calculated vital capacity compare to your predicted vital capacity? Explain any differences you might have seen. \_\_\_\_\_

12. Describe the effect that age would have on vital capacity and why it would have this effect. \_\_\_\_\_

## Factors Influencing Rate and Depth of Respiration

13. Where are the neural control centers of respiratory rhythm? \_\_\_\_\_ and \_\_\_\_\_

For questions 14–21, use your Activity 6 data.

14. In your data, what was the rate of quiet breathing?

Initial testing \_\_\_\_\_ breaths/min

Test performed	Observations (breaths per minute)
Talking	
Yawning	
Laughing	
Standing	
Concentrating	
Swallowing water	
Coughing	
Lying down	
Running in place	

15. Record student data below.

Breath-holding interval after a deep inhalation: \_\_\_\_\_ sec      length of recovery period: \_\_\_\_\_ sec

Breath-holding interval after a forceful expiration: \_\_\_\_\_ sec      length of recovery period: \_\_\_\_\_ sec

After breathing quietly and taking a deep breath (which you held), was your urge to inspire or expire? \_\_\_\_\_

After exhaling and then holding your breath, did you have a desire for inspiration or expiration? \_\_\_\_\_

Explain these results. (*Hint: What reflex is involved here?*) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

16. Observations after hyperventilation: \_\_\_\_\_

\_\_\_\_\_

17. Breath-holding interval after hyperventilation: \_\_\_\_\_ sec

Why does hyperventilation produce apnea or a reduced respiratory rate? \_\_\_\_\_

\_\_\_\_\_

18. Observations for rebreathing air: \_\_\_\_\_

Why does rebreathing air produce an increased respiratory rate? \_\_\_\_\_

19. What was the effect of running in place (exercise) on the duration of breath holding? \_\_\_\_\_

Explain this effect. \_\_\_\_\_

20. Record student data from the test illustrating the effect of respiration on circulation.

Radial pulse before beginning test: \_\_\_\_\_/min      Radial pulse after testing: \_\_\_\_\_/min

Relative pulse force before beginning test: \_\_\_\_\_      Relative force of radial pulse after testing: \_\_\_\_\_

Condition of neck and facial veins after testing: \_\_\_\_\_

Explain these data. \_\_\_\_\_

21. Do the following factors generally increase (indicate ↑) or decrease (indicate ↓) the respiratory rate and depth?

increase in blood CO<sub>2</sub>: \_\_\_\_\_      increase in blood pH: \_\_\_\_\_

decrease in blood O<sub>2</sub>: \_\_\_\_\_      decrease in blood pH: \_\_\_\_\_

Did it appear that CO<sub>2</sub> or O<sub>2</sub> had a more marked effect on modifying the respiratory rate? \_\_\_\_\_

22. Where are sensory receptors sensitive to changes in blood pressure located? \_\_\_\_\_

23. Where are sensory receptors sensitive to changes in O<sub>2</sub> levels in the blood located? \_\_\_\_\_

24. What is the primary factor that initiates breathing in a newborn infant? \_\_\_\_\_

25. Which, if any, of the measurable respiratory volumes would likely be increased in a person who is cardiovascularly fit, such as a runner or a swimmer?

Which, if any, of the measurable respiratory volumes would likely be decreased in a person who has smoked a lot for over 20 years?

26. Blood  $\text{CO}_2$  levels and blood pH are related. When blood  $\text{CO}_2$  levels increase, does the pH increase or decrease?

\_\_\_\_\_ Explain why. \_\_\_\_\_  
\_\_\_\_\_

## Role of the Respiratory System in Acid-Base Balance of Blood

27. Define *buffer*. \_\_\_\_\_

28. How successful was the laboratory buffer (pH 7) in resisting changes in pH when the acid was added? \_\_\_\_\_

When the base was added? \_\_\_\_\_

How successful was the buffer in resisting changes in pH when the additional drops of the acid and base were added to the original samples? \_\_\_\_\_

29. What buffer system operates in blood plasma? \_\_\_\_\_

Which component of the buffer system resists a *drop* in pH? \_\_\_\_\_ Which resists a *rise* in pH? \_\_\_\_\_


30. Explain how the carbonic acid-bicarbonate buffer system of the blood operates. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_


31. What happened when the carbon dioxide in exhaled air mixed with water? \_\_\_\_\_

What role does exhalation of carbon dioxide play in maintaining relatively constant blood pH? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

32.  Atelectasis is a collapsed lung. Explain how a pneumothorax might result in atelectasis and what should be done to restore the negative pressure of the pleural cavity. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

33.  Pectus excavatum is a condition in which the anterior thoracic cage is caved inward because of abnormal development of the sternum and ribs. What effect would you expect this condition to have on vital capacity, and why? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Composer Project Rubric**

Criteria	Points
Spelling, Punctuation, and Grammar	3
Intro Summary and Paragraphs	3
Composer #1	10
Composer #2	10
Comparisons	6
Contrasts	6
References Cited (MLA or APA format)	2

**Performance Response Rubric**

Criteria	Points
Spelling, Grammar	3
Concert Description and Information	3
General Response	8
Favorite Song / Piece	6

**Listening Project Rubric**

Criteria	Points
Spelling, Punctuation, and Grammar	3
Intro and Summary Paragraphs	3
Piece #1	10
Piece #2	10
Comparisons	6
Contrasts	6
References	2

## Module 1 Quiz

Question 1 1 pts

Breaths within the lyrics of a song correspond to the end of:

- an entire section of a work.
- phrases in both the poetry and the music.
- the Romantic era.
- words ending in silent e sounds.

Question 2 1 pts

A cadence is like a:

- cadenza, only longer.
- kazoo, but is not used in today's orchestra.
- period at the end of a sentence and gives the feeling of resolution
- comma in a sentence; it means to continue with the same phrase.

Question 3 1 pts

Rhythm is:

- anything that you can beat on.
- gonna get ya.
- the sequence of long and short sounds and silences through time
- dependent upon melody.

Question 4 1 pts

A chord in music is:

- three or more notes sounded at the same moment.
- a measure of wood used by the scribes as paper.
- a basic unit of meter.
- something that rarely occurs in modern music.

Question 5 1 pts

Dynamics is a term used to indicate the:

- type of instrument.
- musical style.
- musical texture.
- volume of sound.

Question 6 1 pts

Form is based on:

- a free style that changes with each performance.
- the instruments that perform the music.
- the handwriting of the composer.
- three possible strategies: repetition, variation, and contrast.

Question 7 1 pts

The organization of beats into regular groups (duple, triple, etc.) is called:

- steps.
- meter.
- directing helps.
- groupies.

Question 8 1 pts

The opening phrases of "The Star-Spangled Banner" are sung:

- in two different keys.
- to different meters.
- by professionals always.
- to identical music.

Question 9 1 pts

Pianissimo means:

- to play on a small piano.
- very quiet.
- in the style of Mozart.
- loud and vibrant.

Question 10 1 pts

What family includes instruments that use reeds and keys?

- Brass Family
- String Family
- Woodwind Family
- Percussion Family

Question 11 1 pts

What family includes instruments that initiate sound by buzzing the lips in a cup?

- Brass Family
- String Family
- Woodwind Family
- Percussion Family

Question 12 1 pts

What family uses fingers and bows to initiate sound on the instrument?

- Brass Family
- String Family
- Woodwind Family
- Percussion Family



Question 13 1 pts

Which instrument does not belong?

- Piano
- Harpsicord
- Organ
- Xylophone

Question 14 1 pts

What is the name of this instrument?

- Trombone
- French Horn
- Baritone
- Mellophone



Question 15 1 pts

What is the name of this instrument?

- Gong
- Tambourine
- Triangle
- Cymbals



Question 16 5 pts

Match the following terms on the left with the definitions provided on the right.

- Melody
- Conjunct motion
- Harmony
- Timbre
- Fortissimo ( ff )

Smooth, step-wise motion

Tone color; the character of sound.

The sound created by multiple voices playing or singing together.

Very loud dynamic level

A single line of notes heard in succession as a coherent unit

Question 17 5 pts

Match the following terms on the left with the definitions provided on the right.

- Form
- Mezzo piano
- mp
- Genre
- Homophonic
- Variation

Medium quiet dynamic level

Repeating a theme in a slightly different manner

The category of a given work, determined by a combination of its performance medium and its social function

When the melody is performed with a supporting accompaniment.

The structure of a musical work; the way in which its individual units are arranged

Question 18 5 pts

Match the following terms on the left with the definitions on the right.

Monophonic

Disjunct motion

Polyphonic

Texture

The Star Spangled

Banner

national anthem

based on the number and general relationship of musical lines or voices - thick or thin motion with jumps and leaps

The melody is performed against another line of equal importance  
a single, unaccompanied melodic line

Question 19 1 pts

Who composed this music? (Listening clip)

Francis Scott Key

J. S. Bach

Benjamin Britten

Igor Stravinsky

Question 20 1 pts

What section of the orchestra do you hear? (Listening clip)

Brass

Woodwind

String

Percussion

Question 21 1 pts

What section of the orchestra do you hear? (Listening clip)

Brass

Woodwind

String

Percussion

Question 22 1 pts

What section of the orchestra do you hear? (Listening clip)

Brass

Woodwind

String

Percussion

Question 23 1 pts

What instrument do you hear? (Listening clip)

saxophone

tuba

cymbals

trumpet

Question 24 1 pts

What instrument do you hear? (Listening clip)

piano

xylophone

flute and piccolo

cello

Question 25 1 pts

What instrument do you hear? (Listening clip)

violin

bass violin

trumpet

clarinet

Question 26 1 pts

What instrument do you hear? (Listening clip)

oboe

clarinet

flute and piccolo

French Horn

Question 27 1 pts

What instrument do you hear? (Listening clip)

snare drum

bass xylophone

timpani

chimes

Question 28 1 pts

What is the texture of this section? (Listening clip)

monophonic

homophonic

polyphonic

telephonic

**Match the correct English greeting to the correct Spanish greeting.**

- |                           |                      |
|---------------------------|----------------------|
| 1. ____ See you soon.     | A.) ¿Qué tal?        |
| 2. ____ Fine, and you?    | B.) ¿Qué hora es?    |
| 3. ____ What's up?        | C.) Bien. ¿y tú?     |
| 4. ____ How are you?      | D.) ¿Cómo te llamas? |
| 5. ____ What time is it?  | E.) ¿Cómo estás?     |
| 6. ____ What's your name? | F.) Hasta pronto.    |

**El verbo ser:**

1. ¿Ustedes \_\_\_\_\_ de Tejas?
2. ¿Nosotros no \_\_\_\_\_ de Tejas?
3. Yo \_\_\_\_\_ de Arizona.
4. Eva \_\_\_\_\_ de Arizona también.
5. ¿Tú \_\_\_\_\_ de México?

**Translate 'Las Estaciones' into Spanish. (Spelling counts)**

Spring

Winter

Summer

Fall

**Classify the following verbs: (AR, ER, IR)**

1. Cantar \_\_\_\_\_
2. Recibir \_\_\_\_\_
3. Sacar \_\_\_\_\_
4. Esconder \_\_\_\_\_
5. Descansar \_\_\_\_\_

**Ser and Estar**

Which is permanent? \_\_\_\_\_

Which is temporary? \_\_\_\_\_

**Numeros: Translate to Spanish**

1. Five \_\_\_\_\_

- a. Cenco
- b. Sinco
- c. Cinco
- d. Senco

2. Two \_\_\_\_\_

- a. Does
- b. Dose
- c. Doce
- d. Dos

3. Eight \_\_\_\_\_

- a. Ocho
- b. Acho
- c. Oso
- d. Ocha

4. One \_\_\_\_\_

- a. Oneo
- b. Uno
- c. Junio
- d. Once

5. Six \_\_\_\_\_

- a. Sies
- b. Seis
- c. Cies
- d. Ceis

6. Four \_\_\_\_\_

- a. Quarto
- b. Quatro
- c. Cuarto
- d. Cuatro

7. Nine \_\_\_\_\_

- a. Nieva
- b. Nueve
- c. Nuevo
- d. Nieve

8. Seven \_\_\_\_\_

- a. Ciente
- b. Siete
- c. Ceinte
- d. seite

9. Three \_\_\_\_\_

- a. Tres
- b. trece
- c. Trees
- d. Thres

10. Ten \_\_\_\_\_

- a. Diez
- b. Dies
- c. Diaz
- d. Dias

**Choose the correct answer.**

1.) The friends (male) = \_\_\_\_\_ amigos.

- a) los
- b) las
- c) unos
- d) el

2.) Some houses = \_\_\_\_\_ casas.

- a) los
- b) unos
- c) la
- d) unas

3.) The teacher (feminine) = \_\_\_\_\_ maestra.

- a) uno
- b) el
- c) la
- d) las

4.) The door = \_\_\_\_\_ puerta.

- a) un
- b) uno
- c) unas
- d) la

5.) The women = \_\_\_\_\_ mujeres.

- a) los
- b) una
- c) unos
- d) las

**Family: fill in the blank with the correct Spanish word.**

1. My sister's daughter is my? \_\_\_\_\_.
2. My mom's son is my? \_\_\_\_\_.
3. My mom's sister is my? \_\_\_\_\_.
4. The man that is married to my mother is my? \_\_\_\_\_.
5. My dad's mother is my? \_\_\_\_\_.
6. My uncles son is my? \_\_\_\_\_.
7. My daughter is my dad's? \_\_\_\_\_.
8. My dad's brother is my? \_\_\_\_\_.
9. My mom's dad is my? \_\_\_\_\_.
10. My sister's husband is her? \_\_\_\_\_.
11. Ricky is my mom' nephew, he is my? \_\_\_\_\_.
12. Gloria lives next door to me, she is my? \_\_\_\_\_.
13. Libby is my mother's mother, she is my? \_\_\_\_\_.
14. Albert is my sister's husband, she is his? \_\_\_\_\_.
15. My dad's granddaughter is my \_\_\_\_\_ / \_\_\_\_\_. (two answers for this one)
16. My brother's sister is my \_\_\_\_\_.
17. My dad's sister is my \_\_\_\_\_.
18. My brother is my grandfather's \_\_\_\_\_.
19. Gina and Julie are my cousins; their dad is my mother's \_\_\_\_\_.
20. Alicia is my aunt's daughter she is my \_\_\_\_\_.

**Fill in the blank. *El verbo tener***

1. Víctor y Linda \_\_\_\_\_ una casa grande.
2. María \_\_\_\_\_ tres gatos y un perro.
3. Nosotros \_\_\_\_\_ cinco hijos.
4. Ellos \_\_\_\_\_ doce nieto y una nieta.
5. ¿Usted no \_\_\_\_\_ carro?

**Fill in the blank. *El verbo Estar.***

1. Los perros \_\_\_\_\_ en la calle.
2. Nosotros \_\_\_\_\_ en la clase.
3. Ellos \_\_\_\_\_ en la tienda.
4. ¿En dónde \_\_\_\_\_ los libros?
5. Manuel \_\_\_\_\_ enfermo

**Match up the correct English to Spanish word.**

- |                     |                      |
|---------------------|----------------------|
| _____ 1. Technology | a. La Clase          |
| _____ 2. Whiteboard | b. La Ciencia        |
| _____ 3. Class      | c. Enseñar           |
| _____ 4. Bus        | d. La Tecnología     |
| _____ 5. Pencil     | e. El Escritorio.    |
| _____ 6. Science    | f. Calificación      |
| _____ 7. Teach      | g. La Pizarra Blanca |
| _____ 8. Student    | h. El Lápiz          |
| _____ 9. Desk       | i. El Autobús        |
| _____ 10. Grades    | j. El Estudiante     |

**Add the numbers and write the answer in Spanish.**

- |              |             |
|--------------|-------------|
| 31+4= _____  | 5+10= _____ |
| 27+24= _____ | 7+17= _____ |
| 9+8= _____   | 19+1= _____ |



**Greetings multiple choice.**

1. \_\_\_\_\_ tardes.  
A.) Bonas      B.) Buenas      C.) Benas      D) Benos
2. Hola Señora Gloria. ¿Cómo está usted? \_\_\_\_\_, gracias.  
A.) Mey bein    B.) Muy bein    C.) Muy ben    D.) Muy bien
3. Estoy \_\_\_\_\_ de conocer la.  
A.) encantade      B.) encantado      C.) encantada    D.) encontrado
4. Hola, me \_\_\_\_\_ Patricia.  
A.) llamo      B.) llamar      C.) llamas      D.) lamos
5. Mucho \_\_\_\_\_ conocer te.  
A.) gusto      B.) gusty      C.) gutso      D.) gustado

**Translate, into Spanish, the word that is in the parenthesis.**

1. Yo tengo un carro (red) \_\_\_\_\_.
2. El carro de María es (black) \_\_\_\_\_
3. A Juan no le gusta el color (blue) \_\_\_\_\_
4. La flor es (white) \_\_\_\_\_.
5. La casa de Pablo es (yellow) \_\_\_\_\_

**Spell the correct conjugated form of the word in Spanish.**

- A. Juan (to studies) \_\_\_\_\_ futbol todos los Sábados.
- B. Ella (to read)) \_\_\_\_\_ muchos libros.
- C. Nosotros (to walk) \_\_\_\_\_ por el parque ayer.
- D. Marcos no (to learn) \_\_\_\_\_ en la escuela.
- E. Yo (to eat) \_\_\_\_\_ muchas enchiladas.
- F. Miguel (to look for) \_\_\_\_\_ por su perro.
- G. Yo no (write) \_\_\_\_\_ con un lápiz.
- H. ¿Ustedes (to travel) \_\_\_\_\_ en un avion?

**Conjugate the verb to the correct (present) form.**

1. We buy the newspapers. \_\_\_\_\_ los periódicos.
2. They (female) dances quite well. \_\_\_\_\_ muy bien.
3. We need more money. \_\_\_\_\_ más dinero.
4. Do you guys listen to the radio? ¿\_\_\_\_\_ la radio?
5. Does he work at the hospital? \_\_\_\_\_ en el hospital?

**Translate the following sentences about family into Spanish**

She has two cats \_\_\_\_\_

They have six horses \_\_\_\_\_

We have a cow \_\_\_\_\_

I have a brown bear \_\_\_\_\_

I have three ducks \_\_\_\_\_

**Fill in the blank with the correct answer. El/La**

The dog is very big. \_\_\_\_\_ perro de mi amigo es muy grande.

Give me the notebook. Dame \_\_\_\_\_ cuaderno.

I am going to sleep on the sofa. Voy a dormir en \_\_\_\_\_ sofá.

Where is your parents' home? ¿Dónde está \_\_\_\_\_ casa de tus padres?

I felt bad all day long. Me sentí mal todo \_\_\_\_\_ día.

Jessica threw the computer out the window. Jessica tiró la computadora por \_\_\_\_\_ ventana.

The bathroom is very small. \_\_\_\_\_ baño es muy pequeño.

The little girl climbs the latter. \_\_\_\_\_ niña sube por la escalera.

Please pass me the book. Pásame \_\_\_\_\_ libro, por favor.

The food is very taste. \_\_\_\_\_ comida es muy rica.

**Write the following words in Spanish. State if they are masculine or feminine.**

<b>English</b>	<b>El/La</b>	<b>Spanish</b>
Pen	_____	_____
Chair	_____	_____
Flag	_____	_____
Bathroom	_____	_____
Clock	_____	_____
Marker	_____	_____
Computer	_____	_____
Homework	_____	_____
Book	_____	_____
School	_____	_____

### **Culture Questions**

- True or False: The reason the White family moved to McFarland was because the school was one of the best in the State?
- True or False: The owner of the corner store gave Mr. White a chicken to welcome the family to the area?
- True or False: The first restaurant that the Whites went to served burgers and Mexican food but not spaghetti.
- True or False: On “Spare Parts”, Mr. Cameron (the teacher) took that job because he especially wanted to help with the robotic club.
- True or False: All the young boy on Spare Parts were illegal except for Cristian.
- What kind of bike did Coach White ride?
  - A three wheeler.
  - A Barbie bike.
  - A ten speed bike.
  - A motor bike.
- What did the guys in Spare Parts use on “Stinky”?
  - Tampons
  - Towels
  - Toilet Paper
  - Training Pull Ups.

## Bioethics Research Project:

Investigate an issue related to the course, process the information, and write a comprehensive analysis of the ethics of your topic. A bibliography will provide the reader with a way to follow the sources of the paper. Citations will give credit to the source of information (quotes, data, etc.), that are not common knowledge.

The research assignment is to:

- Choose a topic related to ethics and health care or health policy (approved by your instructor--)
- Find materials related to the topic, using libraries as well as the internet. Read and record the nature of each selection, its usefulness to the reader, and a synopsis of its content.
- Create an annotated bibliography, using MLA format: include all of the information needed for a reader to follow your sources. Include author, when known; publisher or web site; access date for internet sources; date of publication (if known for internet sources-), publisher, and copyright date.
- Write a summary of the ethical issues, on both sides of your topic: include the ethical principles and theories discussed in class. Make sure to have balance between the ethics supporting the topic and those opposed. (This is research, not a position paper/project.)

The requirements for this project include:

- 1) A minimum of 20 sources. You may not use your textbook. Feel free to use the textbook's bibliography, however.
- 2) A minimum of 15 professional sources (peer reviewed, professional, governmental, etc.: when in doubt, check with the instructor-)
- 3) Sufficient annotations to indicate both the content and the utility of each source. ***DO NOT QUOTE FROM YOUR SOURCES FOR YOUR ANNOTATIONS.***
- 4) A minimum of two page, typewritten review of the ethics on both sides of your topic. Make sure to cite any data, quotes, or information not found in at least three sources.
- 5) A signed grading rubric for the project.

This project is due on the date in your syllabus, not after your class. Late projects will be docked for every day (including the anytime following the class).

The instructor is willing to consult with you, review your sources, read a rough draft, etc. There will be no revised papers or revised grades after the due date.

Any plagiarism detected will be discussed with the student, and then reported to the Dean of Students. This is a serious violation of academic honesty, and NOT ACCEPTABLE for a college student.

Rubric for assessment of “killing the Buddha” lab

Number of groups assessed =

Enter the number of groups that fall into each category.

Essential Skill: Social and personal responsibility	Unacceptable	Acceptable	Target
Civic discourse	Data clearly contradicts plausible (but incorrect) idea but group reports consistency with incorrect idea.	Data of insufficient quality to disprove plausible (but incorrect) idea and group reports appropriate conclusion.	Data clearly contradicts plausible (but incorrect) idea and group reports failure of plausible idea.

## How does the Period of a Pendulum

Depend on Amplitude?

### INTRODUCTION

In 1624 Galileo published *Dialogues Concerning Two New Sciences*, in which he presented many of his ideas and discoveries concerning physics and astronomy. In this book, he makes the following statement about the period of the simple pendulum:

"I never dreamed of learning that one and the same body when suspended from a string a hundred cubits long and pulled aside through an arc of 90 degrees or even 1 degree or 1/2 degree would employ the same time in passing through the largest of these arcs ... each pendulum has its own time of vibration so definite and determinate that it is not possible to make it move with any other period than that which nature has given it

... if two persons start to count the vibrations, the one the large, the other the small, they will discover that after counting tens and even hundreds that they will not differ by a single vibration, not even a fraction of one ... This observation justifies ... the following proposition ... namely, that vibrations of very large and small amplitude all occupy the same time."

Galilei, G. *Dialogues Concerning Two New Sciences*, translated by H. Crew and A. de Salvio, Dover 1954. pp 97,254-55.

Put briefly, Galileo's assertion is this: the period (time for one complete swing) of the simple pendulum is independent of the arc through which it swings. The purpose of this lab is to test this assertion experimentally.

### EXPERIMENTAL METHOD

Measure the period for four different amplitudes ( $\approx 10^\circ$ ,  $\approx 30^\circ$ ,  $\approx 45^\circ$ ,  $\approx 80^\circ$ ). Time single swings, not 10 repetition, since the larger amplitude motions decay rapidly with repetition. Perform each measurement five times. Calculate and plot the data.

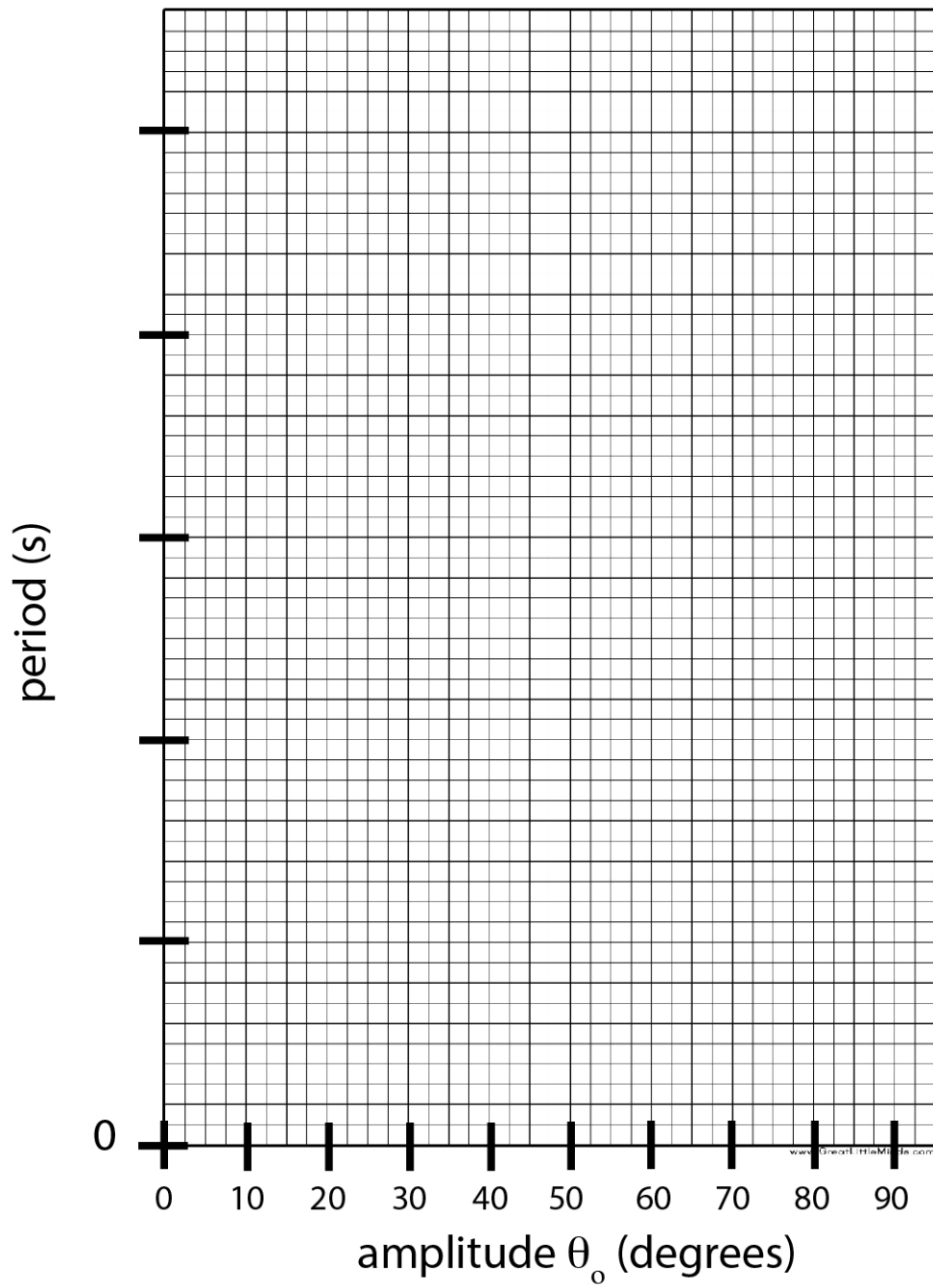
### RESULTS

Answer the question: Are your data consistent with Galileo's proposition that the pendulum period does not depend on the amplitude? Briefly explain how your data lead you to your conclusion.

# DATA

Length (cm)	Period 1 (s)	Period 2 (s)	Period 3 (s)	Period 4 (s)	Period 5 (s)	Mean period (s)	SDM period (s)
10°							
30°							
45°							
80°							

# Dependence of period on amplitude





## Lab Exercise 23 Assessment

Group Member Names:

### Learning Objectives:

1. Describe the process of scientific inquiry.
2. Solve problems scientifically.
3. Communicate scientific information.
4. Apply quantitative analysis to scientific problems.

Instructions: Complete lab exercise *C. Tactile Sensitivity of Different Body Areas* using the two-point discrimination test to determine the density of cutaneous receptors of the cheek, fingertip, palm, forearm and back of leg.

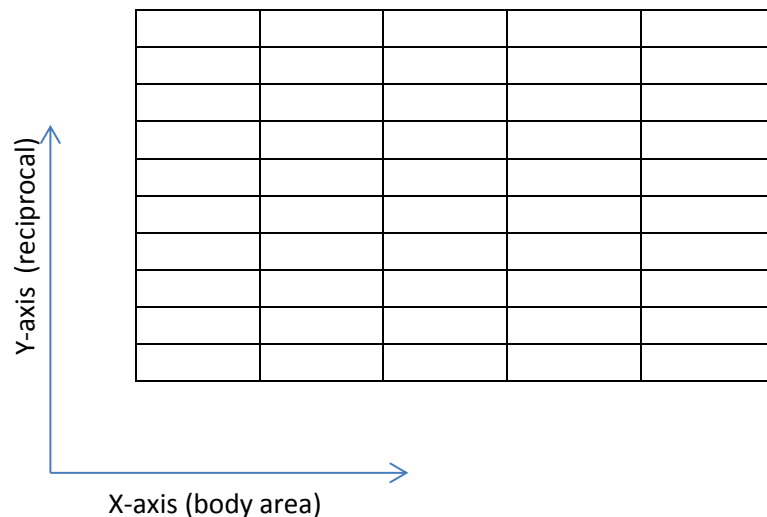
- I. **Observation:** Based on your general knowledge, do all areas of the body have the same density of cutaneous sensory receptors? Include a brief explanation of how you know this. Use complete sentence(s).
  
- II. **Hypothesis:** Prior to performing this exercise, make an educated guess of which areas (cheek, fingertip, palm, forearm, or back of leg) will have the greatest and least density of sensory receptors? Answer in complete sentence(s).
  
- III. **Testing (Data Collection, Analysis, & Results):** Using the procedure in your lab manual, complete the following.

Area of Body	Two-Point Discrimination Distance (mm)	Reciprocal Calculation
Cheek		
Fingertip		
Palm		
Forearm		
Back of Leg		

Calculation: Reciprocal =  $(1/\text{two-point distance})$

NOTE: Reciprocal represents the portion of the somatosensory cortex that receives information from the sensory receptors for a given body area. Areas with high-sensory receptor density are represented by a corresponding greater area of cerebral cortex.

Create a bar graph placing the body areas on the X-axis and the reciprocals on the Y-axis.



**IV. Conclusion:**

- a. Write a statement that correlates your results using the two-point discrimination test and the number of cutaneous receptors (receptor density) in a body area.
- b. Based on your data, which body area has the greatest and the least density of cutaneous sensory receptors. Use complete sentence(s).
- c. Does your conclusion support or disprove your hypothesis? Use complete sentence.

**V. Process of Scientific Inquiry:**

- a. During this lab exercise you used the scientific method to investigate the density of cutaneous sensory receptors in various areas of the body. Why was it important for the subject's eyes to remain closed during the experiment? Use complete sentence(s).
- b. In order, briefly explain the four basic steps that scientist use to better understand life processes.
  - 1.
  - 2.
  - 3.
  - 4.

Learning Objective Rubric	Needs Improvement	Meets Standards	Exceeds Standards
Understands process of scientific inquiry			
Solves a problem scientifically			
Communicates information			
Applies quantitative analysis to scientific problems.			

## REVIEW SHEET

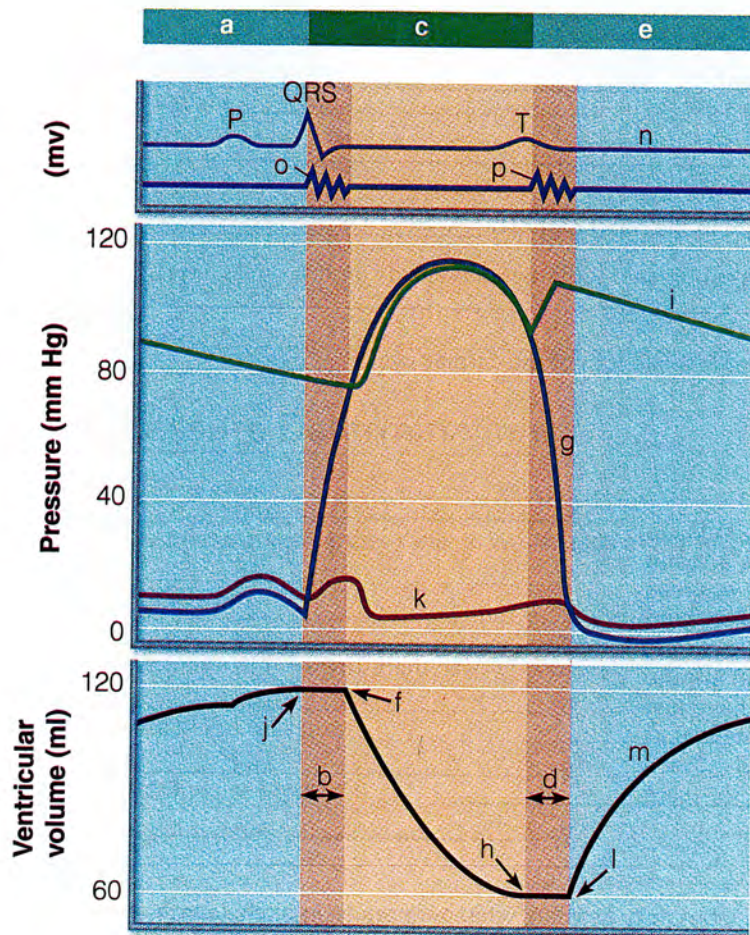
## Human Cardiovascular Physiology—Blood Pressure and Pulse Determinations

Name \_\_\_\_\_

Lab Time/Date \_\_\_\_\_

## Cardiac Cycle

1. Using the terms to the right of the diagram and the letter choices on the diagram, correctly identify each valve closing and opening, chamber pressures, volume lines, heart sounds, and each period of the cardiac cycle.



- \_\_\_\_\_ 1. aortic pressure
- \_\_\_\_\_ 2. atrial pressure (left)
- \_\_\_\_\_ 3. ECG
- \_\_\_\_\_ 4. first heart sound
- \_\_\_\_\_ 5. second heart sound
- \_\_\_\_\_ 6. ventricular pressure (left)
- \_\_\_\_\_ 7. ventricular volume
- \_\_\_\_\_ 8. aortic (semilunar) valve closes
- \_\_\_\_\_ 9. aortic (semilunar) valve opens
- \_\_\_\_\_ 10. AV and semilunar valves are closed (2 letters)
- \_\_\_\_\_ 11. AV valve closes
- \_\_\_\_\_ 12. AV valve opens
- \_\_\_\_\_ 13. ventricular diastole (2 letters)
- \_\_\_\_\_ 14. ventricular systole

2. Define the following terms:

systole: \_\_\_\_\_

diastole: \_\_\_\_\_

cardiac cycle: \_\_\_\_\_



3. Answer the following questions concerning events of the cardiac cycle:

When are the AV valves closed? \_\_\_\_\_

Open? \_\_\_\_\_

What event within the heart causes the AV valves to open? \_\_\_\_\_

What causes them to close? \_\_\_\_\_

When are the semilunar valves closed? \_\_\_\_\_

Open? \_\_\_\_\_

What event causes the semilunar valves to open? \_\_\_\_\_

To close? \_\_\_\_\_

At what point in the cardiac cycle is the pressure in the heart highest? \_\_\_\_\_

Lowest? \_\_\_\_\_

4. If an individual's heart rate is 80 beats/min, what is the length of the cardiac cycle? \_\_\_\_\_

## Heart Sounds

5. Complete the following statements:

The monosyllables describing the heart sounds are 1 and 1. The first heart sound is a result of closure of the 2 and 2 valves, whereas the second is a result of closure of the 3 and 3 valves. The heart chambers that have just been filled when you hear the first heart sound are the 4 and 4, and the chambers that have just emptied are the 5 and 5. Immediately after the second heart sound, the 6 and 6 are filling with blood, and the 7 and 7 are empty.

1. \_\_\_\_\_ and \_\_\_\_\_

2. \_\_\_\_\_ and \_\_\_\_\_

3. \_\_\_\_\_ and \_\_\_\_\_

4. \_\_\_\_\_ and \_\_\_\_\_

5. \_\_\_\_\_ and \_\_\_\_\_

6. \_\_\_\_\_ and \_\_\_\_\_

7. \_\_\_\_\_ and \_\_\_\_\_

6. As you listened to the heart sounds during the laboratory session, what differences in pitch, length, and amplitude (loudness) of the two sounds did you observe? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. No one expects you to be a full-fledged physician on such short notice, but on the basis of what you have learned about heart sounds, how might abnormal sounds be used to diagnose heart problems? (Use your textbook as necessary.)

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---



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## The Pulse

8. Define *pulse*: \_\_\_\_\_
- 
9. Identify the artery palpated at each of the following pressure points:
- at the wrist \_\_\_\_\_ on the dorsum of the foot \_\_\_\_\_
- in front of the ear \_\_\_\_\_ at the side of the neck \_\_\_\_\_
- in the groin \_\_\_\_\_ above the medial malleolus \_\_\_\_\_
10. How would you tell by simple observation whether bleeding is arterial *or* venous? \_\_\_\_\_
- 

## Blood Pressure Determinations

11. Define *blood pressure*: \_\_\_\_\_
12. Identify the phase of the cardiac cycle to which each of the following apply:
- systolic pressure \_\_\_\_\_ diastolic pressure \_\_\_\_\_
13. What is the name of the instrument used to compress the artery and record pressures in the auscultatory method of determining blood pressure? \_\_\_\_\_
14. What are sounds of Korotkoff? \_\_\_\_\_
- 
- What causes the systolic sound? \_\_\_\_\_
- 
- The disappearance of sound? \_\_\_\_\_
15. Interpret 145/85. \_\_\_\_\_
-



16. In Exercise 21, you learned about the relative positions of veins and arteries. Based on this knowledge, how would you expect venous pressures to compare to arterial pressures?

Why? \_\_\_\_\_

## Observing the Effect of Various Factors on Blood Pressure and Heart Rate

17. What effect do the following have on blood pressure? (Indicate increase by I and decrease by D.)

\_\_\_\_\_ 1. increased diameter of the arterioles

\_\_\_\_\_ 4. hemorrhage

\_\_\_\_\_ 2. increased blood viscosity

\_\_\_\_\_ 5. arteriosclerosis

\_\_\_\_\_ 3. increased cardiac output

\_\_\_\_\_ 6. increased pulse rate

18. In which position (sitting, reclining, or standing) is the blood pressure normally the highest?

\_\_\_\_\_ The lowest? \_\_\_\_\_

What immediate changes in blood pressure did you observe when the subject stood up after having been in the sitting or reclining position? \_\_\_\_\_

What changes in the blood vessels might account for the change? \_\_\_\_\_

After the subject stood for 3 minutes, what changes in blood pressure did you observe? \_\_\_\_\_

How do you account for this change? \_\_\_\_\_

19. What was the effect of exercise on blood pressure? \_\_\_\_\_

On pulse? \_\_\_\_\_ Do you think these effects reflect changes in cardiac output or in peripheral resistance? \_\_\_\_\_

## Skin Color as an Indicator of Local Circulatory Dynamics

20. Describe normal skin color and the appearance of the veins in the subject's forearm before any testing was conducted.

21. What changes occurred when the subject emptied the forearm of blood (by raising the arm and making a fist) and the flow was blocked with the cuff? \_\_\_\_\_

10. In the chart that follows, record information from the blood tests you conducted. Complete the chart by recording values for healthy male adults and indicating the significance of high or low values for each test.

Test	Student test results	Normal values (healthy male adults)	Significance	
			High values	Low values
→ Total WBC count	—			
Total RBC count	—			
→ Hematocrit				
Hemoglobin determination				
Coagulation time				

11. Define *hematocrit*: \_\_\_\_\_
12. If you had a high hematocrit, would you expect your hemoglobin determination to be high or low?  
 \_\_\_\_\_ Why? \_\_\_\_\_  
 \_\_\_\_\_
13. If your blood clumped with both anti-A and anti-B sera, your ABO blood type would be \_\_\_\_\_. To what ABO blood groups could you give blood? \_\_\_\_\_ From which ABO donor types could you receive blood? \_\_\_\_\_  
 Which ABO blood type is most common? \_\_\_\_\_ Least common? \_\_\_\_\_



## Cell Division: Mitosis and Cytokinesis

**OBJECTIVE 3** Define *interphase*, *mitosis*, and *cytokinesis*, and list and describe (and/or identify) the stages of mitosis.

The **cell cycle** is a series of events that most cells complete during their life span. It includes two stages—**interphase**, the longer period when the cell grows and carries out its usual activities, and **cell division**, when the cell reproduces itself by dividing. In an interphase cell about to divide, the genetic material (DNA) is replicated. Once this important event has occurred, cell division occurs.

Cell division in all cells other than bacteria consists of a series of events collectively called mitosis and cytokinesis. **Mitosis** is nuclear division; **cytokinesis** is the division of the cytoplasm, which begins after mitosis is nearly complete. Although mitosis is usually accompanied by cytokinesis, sometimes division of the cytoplasm does not occur, and binucleate (or multinucleate) cells are formed. This is relatively common in the human liver and during embryonic development of skeletal muscle cells.

The products of **mitosis** are two daughter nuclei that are genetically identical to the mother nucleus. The function of

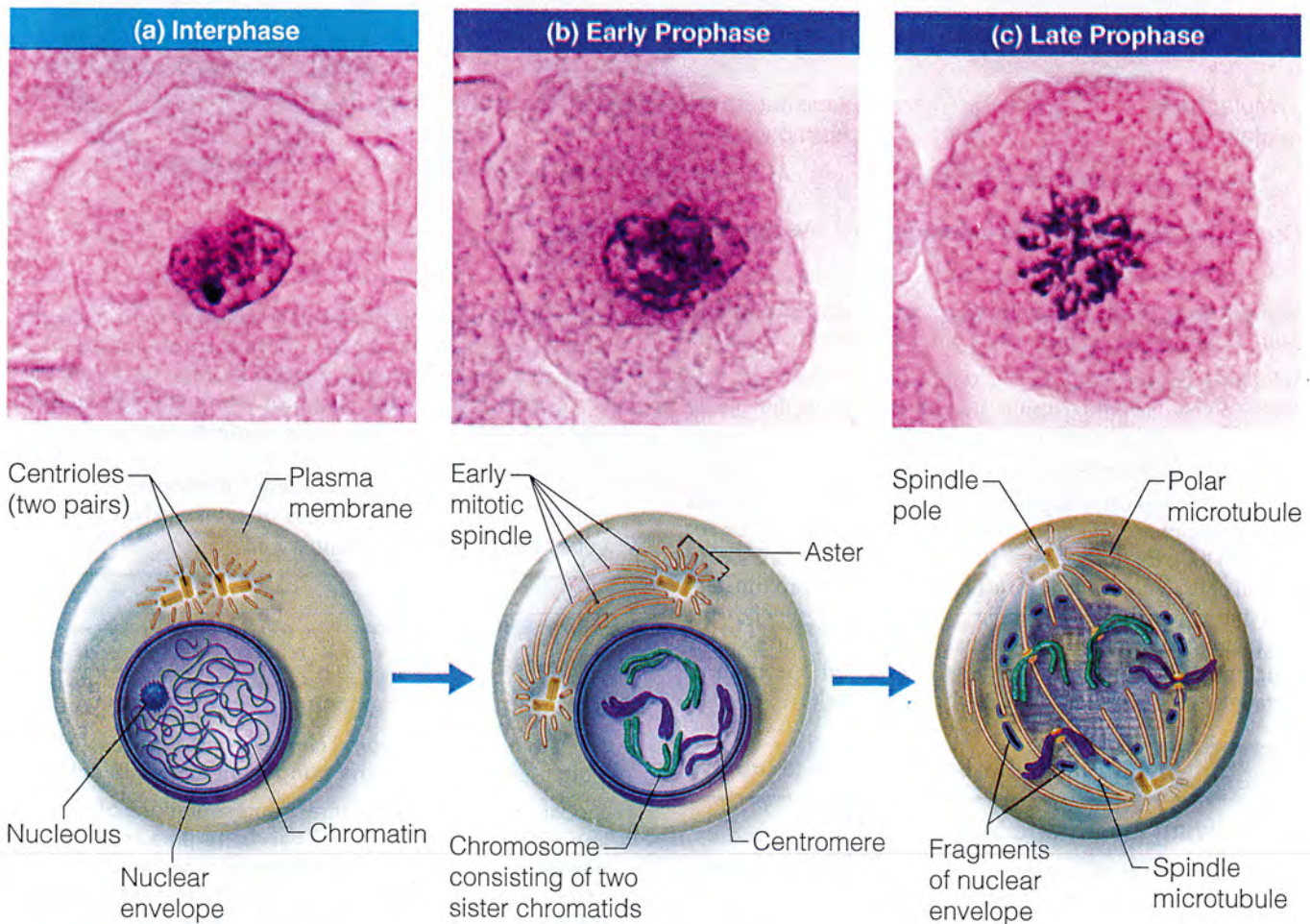
*mitotic* cell division in the body is to increase the number of cells for growth and repair.

The stages of mitosis illustrated in **Figure 3.3** include the following events:

**Prophase** (Figure 3.3b and c): As cell division begins, the chromatin threads coil and shorten to form densely staining, short, barlike **chromosomes**. By the middle of prophase, the chromosomes are obviously double-stranded structures (each strand is a **chromatid**) connected by a buttonlike body called a **centromere**. The centrioles separate from one another and direct the assembly of a system of microtubules called the **mitotic spindle** between them. The spindle acts as a scaffolding to which the chromosomes attach and are moved along during later mitotic stages. Meanwhile, the nuclear envelope and the nucleolus break down and disappear.

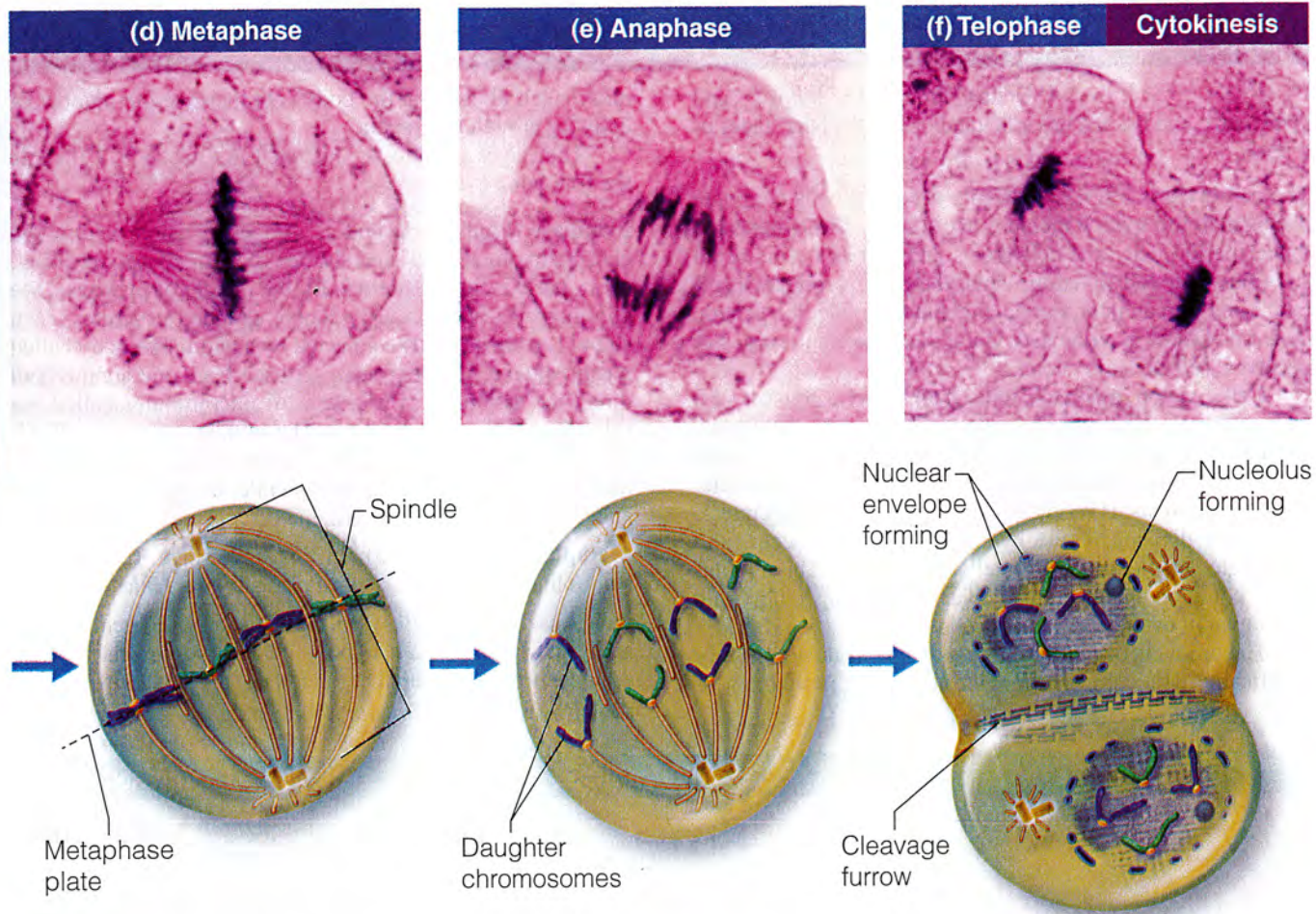
**Metaphase** (Figure 3.3d): In this brief stage, the chromosomes line up along the central plane, or metaphase plate.

**Anaphase** (Figure 3.3e): During anaphase, the centromeres split, and the chromatids (now called chromosomes again) separate from one another and then move slowly toward



**Figure 3.3** The interphase cell and the stages of mitosis. The cells shown are from an early embryo of a whitefish. Photomicrographs are above; corresponding diagrams are below. (Micrographs approximately 1600 $\times$ .)





**Figure 3.3 (continued)** The interphase cell and the stages of mitosis.

opposite ends of the cell with their “arms” dangling behind them. Anaphase is complete when poleward movement ceases.

**Telophase** (Figure 3.3f): Events of prophase are reversed. The chromosomes uncoil and resume the chromatin form, the spindle breaks down and disappears, a nuclear envelope forms around each chromatin mass, and nucleoli appear in the daughter nuclei.

**Cytokinesis** typically begins in late anaphase and continues through telophase (Figure 3.3f) and provides a good clue for where to look for the mitotic structures visible in telophase. In animal cells, a *cleavage furrow* begins to form approximately over the equator of the spindle and eventually pinches the original cytoplasmic mass into two parts. Once formed, the daughter cells grow and carry out the normal spectrum of metabolic processes until it is their turn to divide.

### Activity 5

#### Identifying the Mitotic Stages

1. Use the three-dimensional models of dividing cells to identify each of the mitotic states.
2. Go to station 2 of the demonstration area, where slides of whitefish blastulae are set up for your microscopic study of mitosis. The cells of each *blastula* (a stage of embryonic development consisting of a hollow

ball of cells) are at approximately the same mitotic stage, so it is necessary to observe more than one blastula to view all the mitotic stages. A good analogy for a blastula is a soccer ball in which each of the multisided leather pieces making up the ball's surface represents an embryonic cell.

Examine the slides carefully, identifying the four mitotic stages and the process of cytokinesis. Compare your observations with Figure 3.3.

NOW COUNT 100 CELLS AND RECORD  
FREQUENCY OF THE PHASES.  
**Activity 6** EXPRESS AS % TO SEE TIME A CELL  
SPENDS IN EACH PHASE.

#### Creating Mitotic Figures

1. Obtain a packet of pipe cleaners and a piece of chalk from the supply area, and bring them to your bench.
2. Using the chalk, draw three representations of mitotic spindles on the bench top. Then bend pipe cleaners as necessary to create the typical appearance and location of chromosomes in (1) prophase, (2) metaphase, and (3) anaphase by placing them on your spindle drawings.
3. Have your instructor check your figures of mitosis before you clean up your bench top.



### ***“BIOL 1130L Rubric for Attendance / Interactive Participation / Ethics”***

Note that Instructor will use this as a strong guideline for assessing interaction categories and team-building. There may be varying factors which (when documented in writing) may allow Instructor to modify the points awarded based on an individual circumstance.

If a student is disruptive, disrespectful, not working well with others, not working on the class topics, the Instructor may ask the student to leave and dock points from the student.

<b>Attendance ---worth 2 points per lab.</b>	<b>Interactive participation / teamwork / collaboration / ethical issues ---worth 3 points per lab</b>
arrived in time to sign roll and start on time.	actively interacting with team / contributing to understanding of concepts, ethical integrity.
less than 5-minutes tardy and came in quietly. --lose ½ point	moderate interactive contributions / discussions of concepts, good ethical reasoning. ---lose 1 point
5-15 minutes tardy /quietly --lose 1 point	few interactions / contributions / discussion / good ethics. ---lose 2 points
disruptive entrance --lose 1 point.	no interactions / contributions to team / working alone. ---lose 3 points
15+ minutes tardy /quietly --lose 1.5 points	
absent from class ---lose 2 points	

# Physical Stratigraphy

## STRATIGRAPHY AND CORRELATION

### Overview

In the last chapter you learned to place a series of rock units in sequential order in terms of both relative and measured time by determining the relationship of a series of geologic events one to another. In this chapter you will be examining the relationship of those rock units in stratigraphic terms by correlating the units' lateral and vertical relationships through time.

The chapter covers two primary aspects of physical stratigraphy. First, the discussion will focus on how geologists differentiate and interpret individual or sequences of rock units in terms of being defined as rock-stratigraphic or time-stratigraphic units. Next, the discussion centers on how geologists define and use multiple correlation techniques to develop an equivalency among multiple outcrops of rocks. Correlation is an important concept to geologists. Correlation is one of the main tools used to establish local, regional, or worldwide similarities or changes of rock units within a given relative time frame. The establishment of a correlation between rock units is important when interpreting regional environments of deposition, the presence or absence of unconformities, facies changes within rock units, and a region's geologic history.

## STRATIGRAPHY

### Physical Stratigraphy

To begin the complex process of conducting an interpretation of the geologic history of a given area, such as the Black Hills of South Dakota or the Catskill Mountains of New York, students and professional geologists alike must first collect geologic data from old maps, outcrops, or drilling information, followed by analysis and interpretation. Typically rock outcrops are available along riverbanks and railroad and highway cuts. Subtle changes in the soil types of forests or fields yield information on the underlying rocks. Additionally, detailed subsurface stratigraphic data can be obtained through exploration drilling data associated with water, petroleum, or mining activity. By measuring, describing, and interpreting these scattered pieces of data, geologists can create a broad, detailed interpretation database to develop a region's geologic history. The correlation process of either matching the similarities or noting the differences in the sequence of rock strata from area to area can often be complex. Successful correlation can be accomplished only if the strata have been carefully grouped and environmentally analyzed for evidence that can indicate equivalency. Once correlations are complete, the resulting analysis will lead to an interpretation of an area's geologic history.

### Time and Time-Rock Units

Geologists use two basic stratigraphic methods to subdivide groups or sets of various rock strata. The first involves relative geologic time. In this method, the overall geologic time

scale (see inside back cover of the manual) is progressively broken down into smaller, more detailed time subdivisions (largest to smallest): *eon*, *era*, *period*, *epoch*, and *age*. The second method involves designation of which groups or sets of rock strata have been deposited during any given interval of geologic time. The three main subdivisions are (largest to smallest) *system*, *series*, and *stage*. Those rock strata designated to have been deposited during a specific unit of time are called *time-rock* units. For example, the Ordovician *system* (a time-rock term) consists of whatever rock strata were deposited during the 70 million years designated as the Ordovician *period* (a time term). The equivalent time and time-rock terms are given in the following chart.

GEOLOGIC TIME UNITS	TIME-ROCK UNITS
Eon	*
Era	*
Period	System
Epoch	Series
Age	Stage

\* The terms *Eonothem* and *Erathem* have been proposed but are not considered as practical and are thus not commonly used.

### Rock-Stratigraphic Units

Within the realm of time-rock units, geologists must describe and interpret all of the rock units individually and in groups to determine and place these stratigraphic units into the time framework. Thus, geologists have a third set of defined terms, called *rock-stratigraphic* terms, which are not related to time. Individual or small sets of rock layers are correlated locally and regionally to determine the lateral boundaries of those units. Then specific rock-stratigraphic terms are given to these individual or groups of rock layers. The smallest rock-stratigraphic unit that a geologist usually designates on a geologic map is a *formation*. A particular rock unit must meet at least two criteria for a geologist to term it a formation: (1) It must be widespread and thick enough to be mappable, and (2) it must be readily distinguishable from adjacent units. A formation's strata were usually deposited during a restricted time interval under a certain set of environmental conditions within a given area.

ROCK STRATIGRAPHIC UNITS
Group
Formation
Member
Bed

Group—Two or more associated formations.

Formation—A distinctive and mappable rock unit.

Member—Subdivisions of a formation (at least two must be present for such subdivision to be valid).

Bed—The smallest recognized rock-stratigraphic unit (a distinctive portion of a member; *examples*: coal bed, iron-rich bed, and oil-bearing sand bed).

No set limits clearly establish whether formations are mappable. Some individual rock units that are treated as formations are only 4–5 feet thick, whereas other units, such as the Mancos and Pierre formations (Cretaceous) in Colorado and Wyoming, are over 1,000 feet thick. In most cases a formation must be approximately 10–20 feet thick before it is considered readily mappable. Formations commonly are composed of rock units that accumulated under the same environmental conditions or under conditions that were uniformly changing. Therefore all the parts of a formation should be developmentally related. A formation consisting primarily of one rock type usually incorporates

that rock type in its name (Pierre Shale). A formation including two or more related rock types will be named more generally (Morrison Formation).

The boundaries of formations, called *contacts*, usually represent major changes of lithology or sedimentary environment. A formation may start to form first in one area; but then, as a depositional environment expands, the resulting formation will also expand. Consequently, some parts of a formation may have been deposited at different times in different places.

In Figure 3.1(a), the stratigraphic column shows some of the varying formations that can make up a group. Figure 3.1(b) indicates how one formation from this group, the Oread Limestone, is subdivided into members after detailed local mapping. For each named formation (or any rock-stratigraphic unit), a key location and outcrop exists, for example, a creek bank or a canyon. The locality where the formation is well exposed and first defined is called the *type locality*. If it is in the proximity of a well-known geographic landmark, the formation name may be derived from that landmark. For example, the type locality for the Morrison Formation of Jurassic age is near Morrison, Colorado.

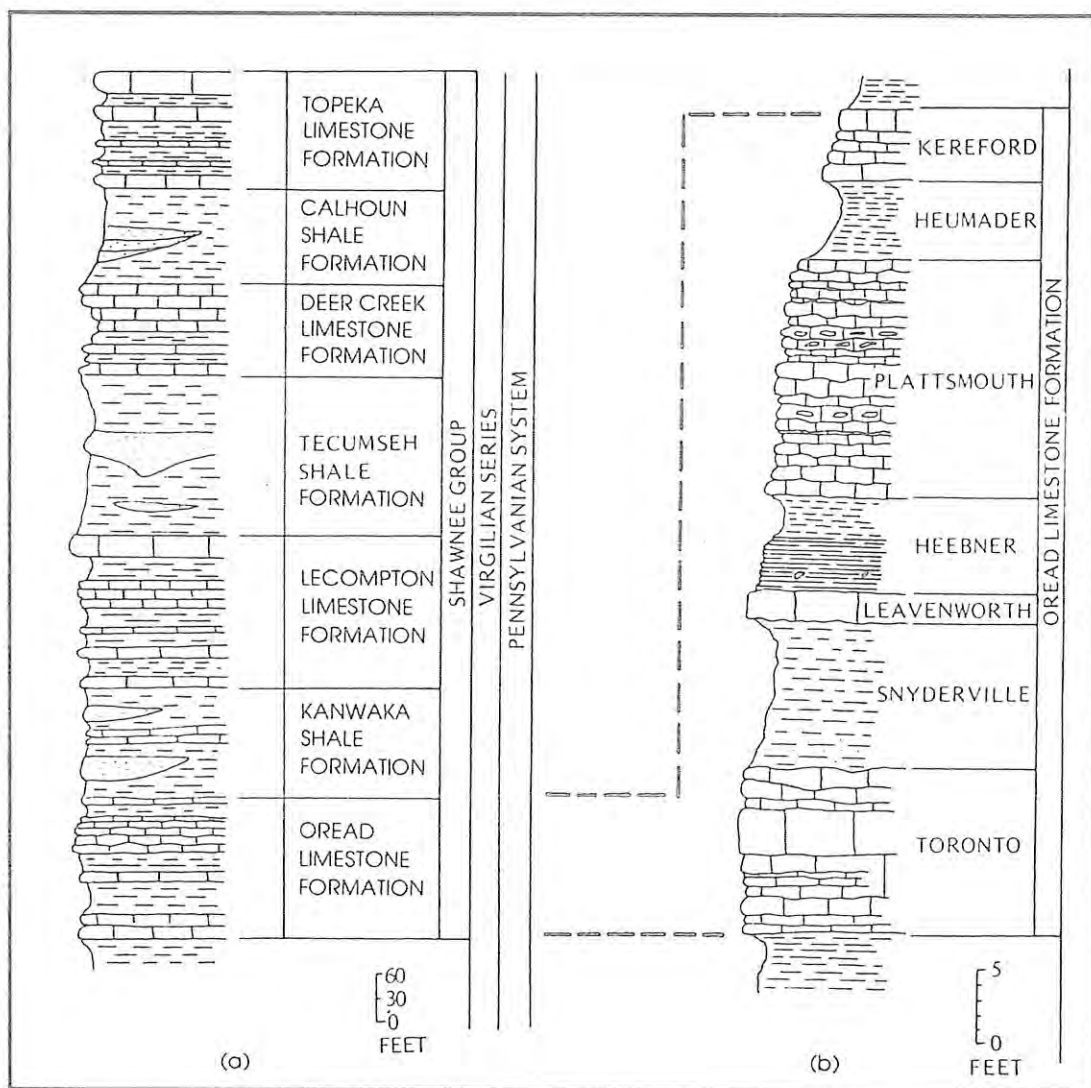


FIGURE 3.1 Measured stratigraphic section of Pennsylvanian strata, Kansas.



In addition to the formal rock-stratigraphic units just discussed, there are some other less formally defined stratigraphic units, such as *biostratigraphic* units (which are identified by a distinctive assemblage of fossils), *paleogeographic* units (which are determined by regional depositional patterns), and *economic* units (which are used to describe the specific occurrence of a mineral-rich zone). The most important and widely used of these is the biostratigraphic unit. In the Gulf Coast region of the United States, for example, there is a widespread and distinctive index fossil, the foraminifera *Heterostegina*, which appears in the subsurface and marks the famous “Het” zone. For geologists and oil companies, the Het zone serves as an important marker for regional correlations.

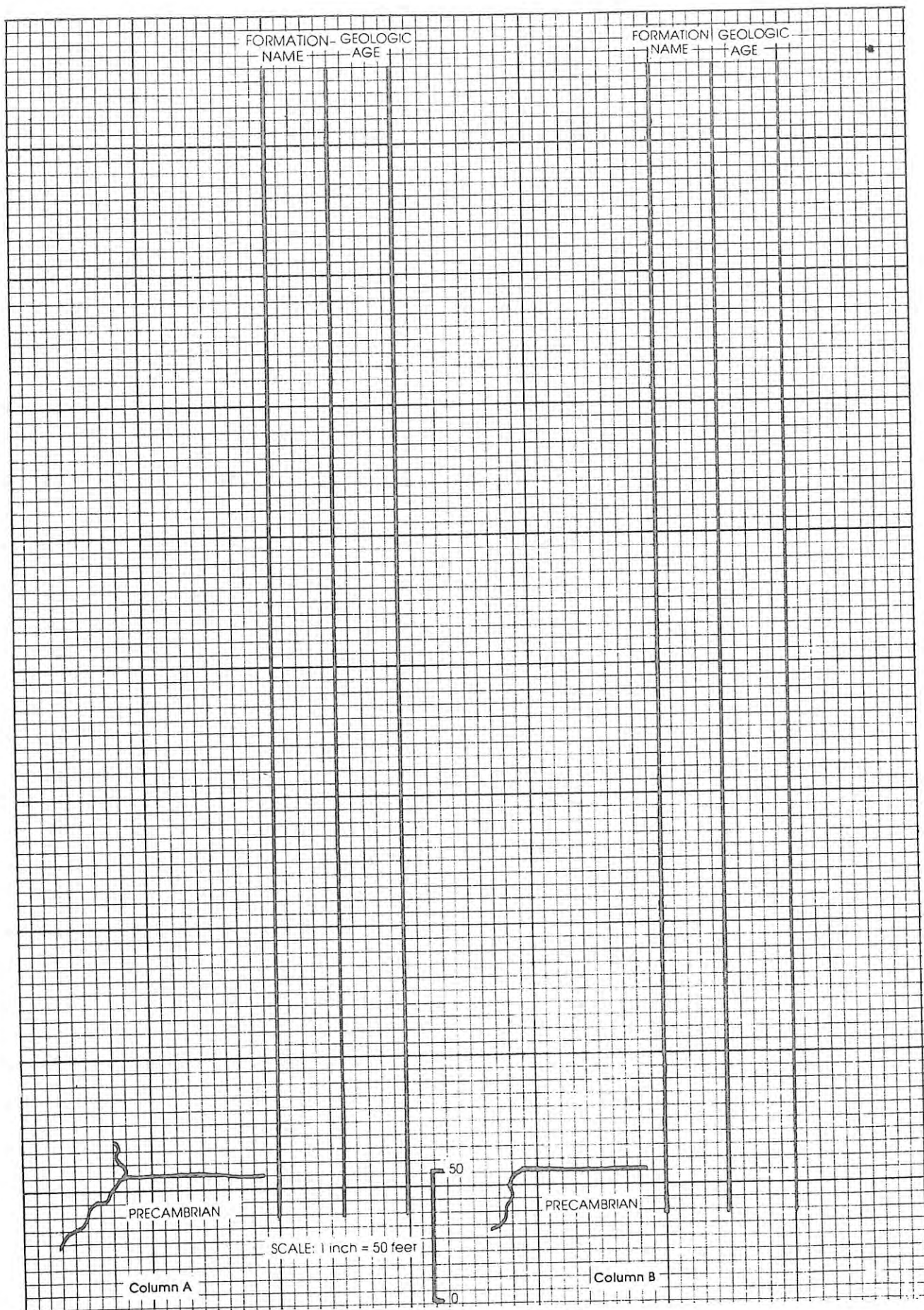
## EXERCISES

### Exercise 3-1 STRATIGRAPHIC SECTIONS, COLORADO

The information in Table 3.1, the data set table, provides thickness measurements and descriptions for the geologic units present in two Paleozoic outcrop sections in Colorado. These data are used to construct and fill in the two correlation columns shown in Figure 3.2. Use

**TABLE 3.1** Data Set—Colorado Stratigraphic Columns

<i>Southeast Colorado (Column A)</i>	<i>Feet</i>	<i>South central Colorado (Column B)</i>	<i>Feet</i>
Leadville Formation (Middle Mississippian)			
Limestone, nodules of chert	110		
Quartzite	5		
Limestone, medium bedded, unfossiliferous	25		
Chaffee Formation (Upper Devonian–Mississippian)		Leadville Formation (Middle Mississippian)	
Limestone, medium bedded, fossils	20	Limestone, thick bedded, crinoids	120
Dolostone, thick bedded	30	Limestone, fossils	10
Quartzite, conglomeratic	25	Limestone with chert	15
Covered	20		
Manitou Formation (Lower Ordovician)		Ouray Formation (Upper Devonian)	
Shale, thin bedded	10	Limestone, thick beds fossiliferous	55
Dolostone, thick beds, fossils	15	Shale, fossils	10
Limestone, chert nodules	45	Sandstone and shale	35
Sawatch Formation (Upper Cambrian)		Ignacio Formation (Upper Cambrian)	
Sandstone, massive	10	Quartzite with lenses of conglomerate	75
Quartzite, massive	5		
Quartzite, irregular cross-bedded	90		
Precambrian		Precambrian	
Total	410	Total	320



**FIGURE 3.2** Graph for construction of columns using Table 3.1 data set.

the column profile shown in Figure 3.1 as a model for a graphical presentation of how a measured section should look along with its weathering profile. Remember that limestones in most climates resist weathering relative to the softer erosion-prone shales; thus, the carbonates are generally ledge formers and the shales tend to have a concave inward pattern in profile. The graphic scale for the thickness of the units is provided on Figure 3.2. When you are finished building the columns, like that shown in Figure 3.1, correlate them by age and lithology and answer the following questions.

- a. Which formations are equivalent by age and lithology even though the formation names are different?
- b. Which formation is present in one area but not in the other?
- c. Which formation changes both its name and thickness from one area to the other?

### LITHOSTRATIGRAPHIC ANALYSIS

Geologists ultimately need to synthesize all the geological data that have been accumulated in the field and the laboratory. One of the most useful ways to synthesize this information is to construct *lithofacies* and *paleogeographic* maps of the study area. The accurate construction and interpretation of these maps depend on an adequate understanding of the principles of correlation, sedimentary environmental analysis, and facies relationships.

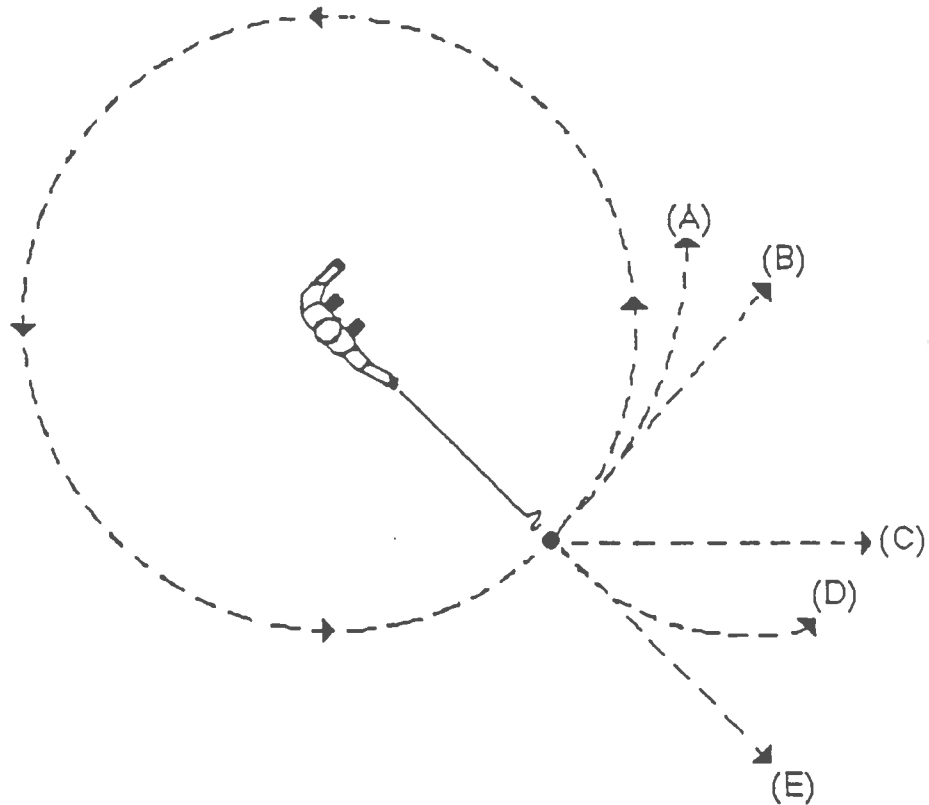
A concept fundamental to the interpretation of a sequence of sedimentary rocks is that of the relative position of a shoreline. When compared to the reference position indicated in Figure 3.3(a), the shoreline in Figure 3.3(b) has moved toward the center of the continent. This landward change of the shoreline with time (called *transgression*) can be caused by a subsidence of the land or by a rise in sea level or by a combination of both processes. Conversely, if the sea level is lowered or the continental margin is raised, the shoreline will be forced away from the continent, as shown in Figure 3.3(c). This process is generally known as *regression*.



## Force Concept Inventory

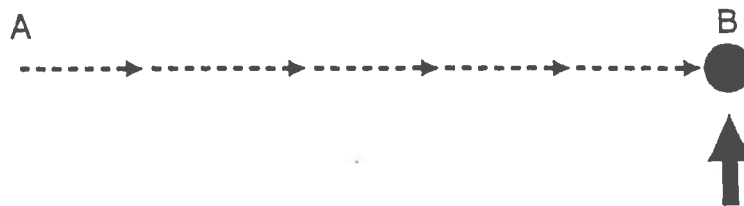
1. Two metal balls are the same size, but one weighs twice as much as the other. The balls are dropped from the top of a two story building at the same instant of time. The time it takes the balls to reach the ground below will be:
  - (A) about half as long for the heavier ball.
  - (B) about half as long for the lighter ball.
  - (C) about the same time for both balls.
  - (D) considerably less for the heavier ball, but not necessarily half as long.
  - (E) considerably less for the lighter ball, but not necessarily half as long.
2. Imagine a head-on collision between a large truck and a small compact car. During the collision,
  - (A) the truck exerts a greater amount of force on the car than the car exerts on the truck.
  - (B) the car exerts a greater amount of force on the truck than the truck exerts on the car.
  - (C) neither exerts a force on the other, the car gets smashed simply because it gets in the way of the truck.
  - (D) the truck exerts a force on the car but the car doesn't exert a force on the truck.
  - (E) the truck exerts the same amount of force on the car as the car exerts on the truck.
3. Two steel balls, one of which weighs twice as much as the other, roll off of a horizontal table with the same speeds. In this situation:
  - (A) both balls impact the floor at approximately the same horizontal distance from the base of the table.
  - (B) the heavier ball impacts the floor at about half the horizontal distance from the base of the table than does the lighter.
  - (C) the lighter ball impacts the floor at about half the horizontal distance from the base of the table than does the heavier.
  - (D) the heavier ball hits considerably closer to the base of the table than the lighter, but not necessarily half the horizontal distance.
  - (E) the lighter ball hits considerably closer to the base of the table than the heavier, but not necessarily half the horizontal distance.

4. A heavy ball is attached to a string and swung in a circular path in a horizontal plane as illustrated in the diagram below. At the point indicated in the diagram, the string suddenly breaks at the ball. If these events were observed from directly above, indicate the path of the ball after the string breaks.

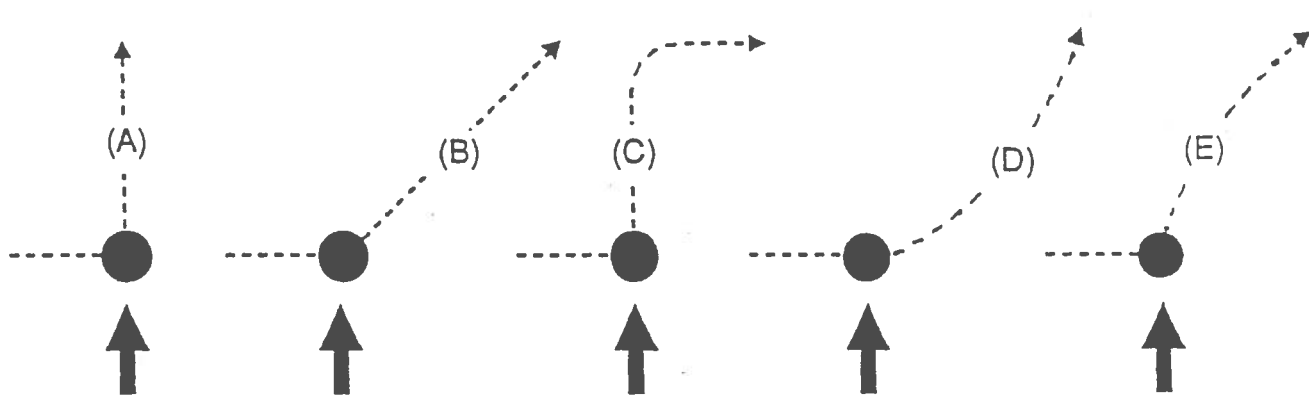


5. A boy throws a steel ball straight up. Disregarding any effects of air resistance, the force(s) acting on the ball until it returns to the ground is(are):
- (A) its weight vertically downward along with a steadily decreasing upward force.
  - (B) a steadily decreasing upward force from the moment it leaves the hand until it reaches its highest point beyond which there is a steadily increasing downward force of gravity as the object gets closer to the earth.
  - (C) a constant downward force of gravity along with an upward force that steadily decreases until the ball reaches its highest point, after which there is only the constant downward force of gravity.
  - (D) a constant downward force of gravity only.
  - (E) none of the above, the ball falls back down to the earth simply because that is its natural action.

- \* Use the statement and diagram below to answer the next four questions:
- \* The diagram depicts a hockey puck sliding, with a constant velocity, from point "A" to point "B" along a frictionless horizontal surface. When the puck reaches point "B", it receives an instantaneous horizontal "kick" in the direction of the heavy print arrow.

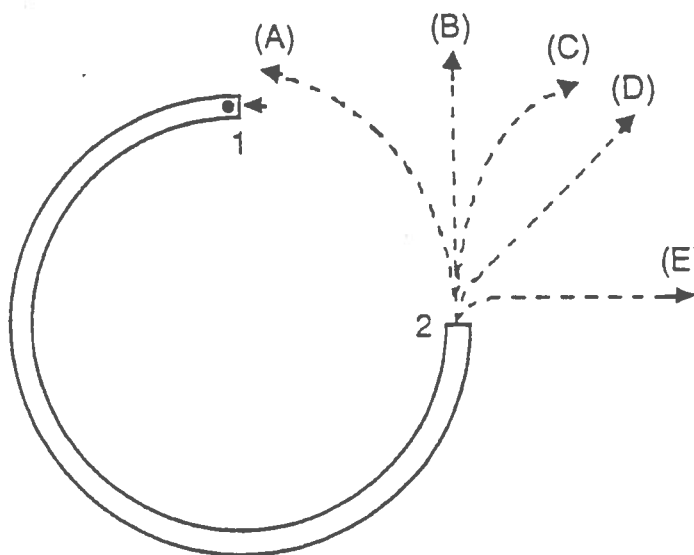


6. Along which of the paths below will the hockey puck move after receiving the "kick" ?

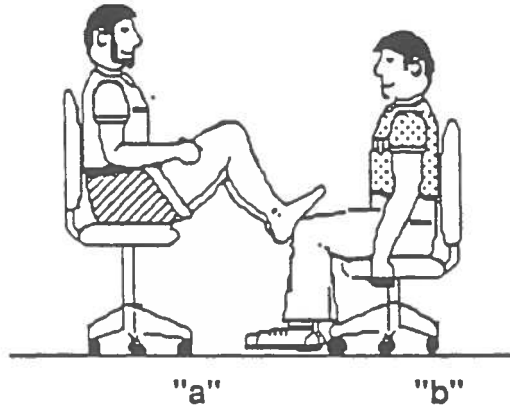


7. The speed of the puck just after it receives the "kick"?
- Equal to the speed " $v_0$ " it had before it received the "kick".
  - Equal to the speed " $v$ " it acquires from the "kick", and independent of the speed " $v_0$ ".
  - Equal to the arithmetic sum of speeds " $v_0$ " and " $v$ ".
  - Smaller than either of speeds " $v_0$ " or " $v$ ".
  - Greater than either of speeds " $v_0$ " or " $v$ ", but smaller than the arithmetic sum of these two speeds.
8. Along the frictionless path you have chosen, how does the speed of the puck vary after receiving the "kick"?
- No change.
  - Continuously increasing.
  - Continuously decreasing.
  - Increasing for a while, and decreasing thereafter.
  - Constant for a while, and decreasing thereafter.

9. The main forces acting, after the "kick", on the puck along the path you have chosen are:
- (A) the downward force due to gravity and the effect of air pressure.
  - (B) the downward force of gravity and the horizontal force of momentum in the direction of motion.
  - (C) the downward force of gravity, the upward force exerted by the table, and a horizontal force acting on the puck in the direction of motion.
  - (D) the downward force of gravity and an upward force exerted on the puck by the table.
  - (E) gravity does not exert a force on the puck, it falls because of the intrinsic tendency of the object to fall to its natural place.
10. The accompanying diagram depicts a semicircular channel that has been securely attached, in a horizontal plane, to a table top. A ball enters the channel at "1" and exits at "2". Which of the path representations would most nearly correspond to the path of the ball as it exits the channel at "2" and rolls across the table top.



- \* Two students, student "a" who has a mass of 95 kg and student "b" who has a mass of 77 kg sit in identical office chairs facing each other. Student "a" places his bare feet on student "b's" knees, as shown below. Student "a" then suddenly pushes outward with his feet, causing both chairs to move.



11. In this situation,

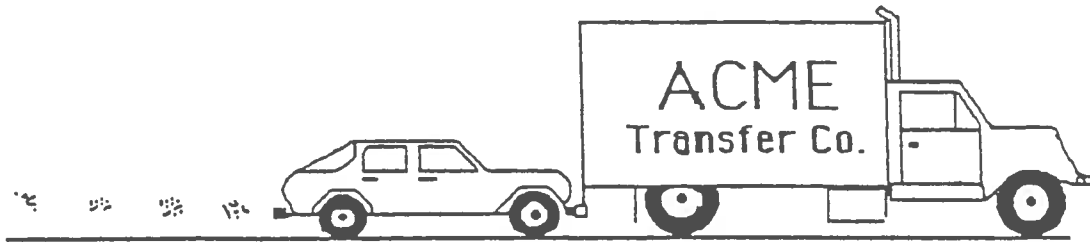
- (A) neither student exerts a force on the other.
- (B) student "a" exerts a force on "b", but "b" doesn't exert any force on "a".
- (C) each student exerts a force on the other but "b" exerts the larger force.
- (D) each student exerts a force on the other but "a" exerts the larger force.
- (E) each student exerts the same amount of force on the other.

12. A book is at rest on a table top. Which of the following force(s) is(are) acting on the book?

- 1. A downward force due to gravity.
- 2. The upward force by the table.
- 3. A net downward force due to air pressure.
- 4. A net upward force due to air pressure.

- (A) 1 only
- (B) 1 and 2
- (C) 1, 2, and 3
- (D) 1, 2, and 4
- (E) none of these, since the book is at rest there are no forces acting on it.

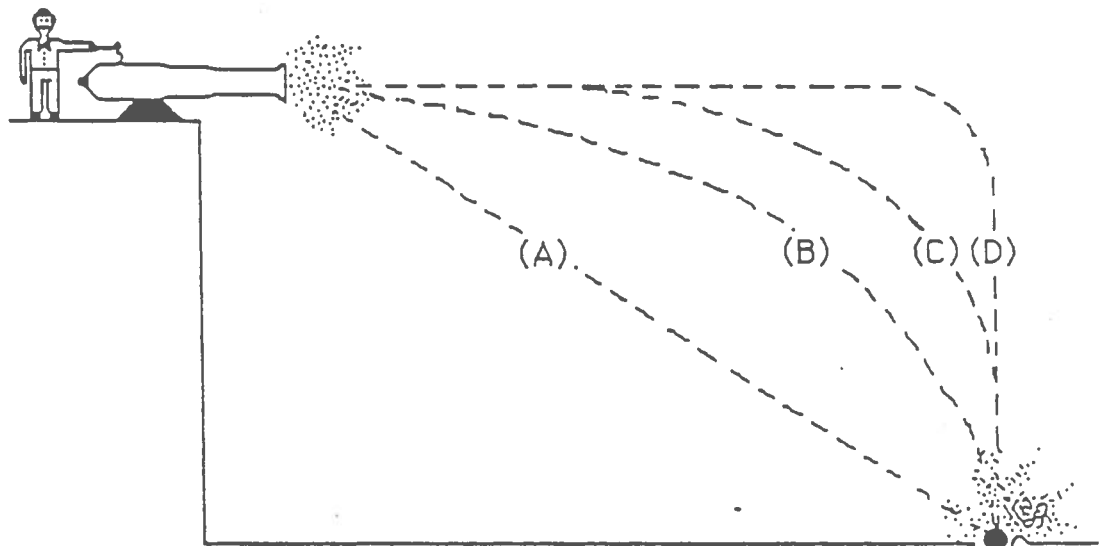
- \* Refer to the following statement and diagram while answering the next two questions.



A large truck breaks down out on the road and receives a push back into town by a small compact car.

13. While the car, still pushing the truck, is speeding up to get up to cruising speed;
- (A) the force of the car pushing against the truck is equal in amount to that of the truck pushing back against the car.
  - (B) the force of the car pushing against the truck is less than that of the truck pushing back against the car.
  - (C) the force of the car pushing against the truck is greater than that of the truck pushing back against the car.
  - (D) the car's engine is running so it applies a force as it pushes against the truck but the truck's engine isn't running so it can't push back with a force against the car.
  - (E) neither the car nor the truck exert any force on the other, the truck is pushed forward simply because it is in the way of the car.
14. After the person in the car, while pushing the truck, reaches the cruising speed at which he/she wishes to continue to travel at a constant speed;
- (A) the amount of force of the car pushing against the truck is equal to that of the truck pushing back against the car.
  - (B) the amount of force of the car pushing against the truck is less than that of the truck pushing back against the car.
  - (C) the amount of force of the car pushing against the truck is greater than that of the truck pushing against the car.
  - (D) the car's engine is running so it applies a force as it pushes against the truck but the truck's engine is not running so it can't push back against the car, the truck is pushed forward simply because it is in the way of the car.
  - (E) neither the car nor the truck exert any force on the other, the truck is pushed forward simply because it is in the way of the car.

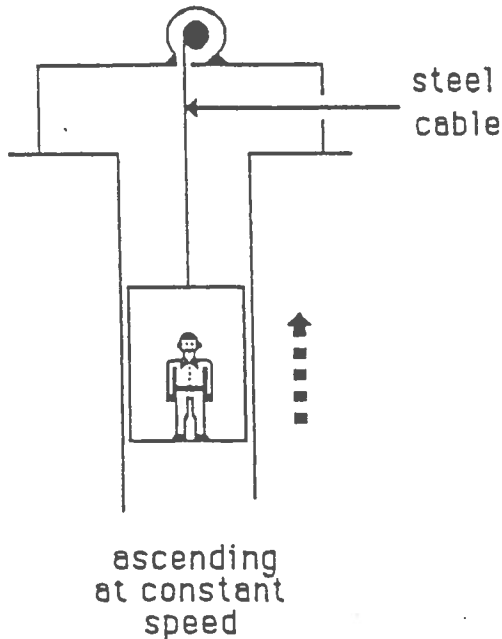
15. When a rubber ball dropped from rest bounces off the floor, its direction of motion is reversed because;
- (A) energy of the ball is conserved.
  - (B) momentum of the ball is conserved.
  - (C) the floor exerts a force on the ball that stops its fall and then drives it upward.
  - (D) the floor is in the way and the ball has to keep moving.
  - (E) none of the above.
16. Which of the paths in the diagram below best represents the path of the cannon ball?



17. A stone falling from the roof of a single story building to the surface of the earth;
- (A) reaches its maximum speed quite soon after release and then falls at a constant speed thereafter.
  - (B) speeds up as it falls, primarily because the closer the stone gets to the earth, the stronger the gravitational attraction.
  - (C) speeds up because of the constant gravitational force acting on it.
  - (D) falls because of the intrinsic tendency of all objects to fall toward the earth.
  - (E) falls because of a combination of the force of gravity and the air pressure pushing it downward.

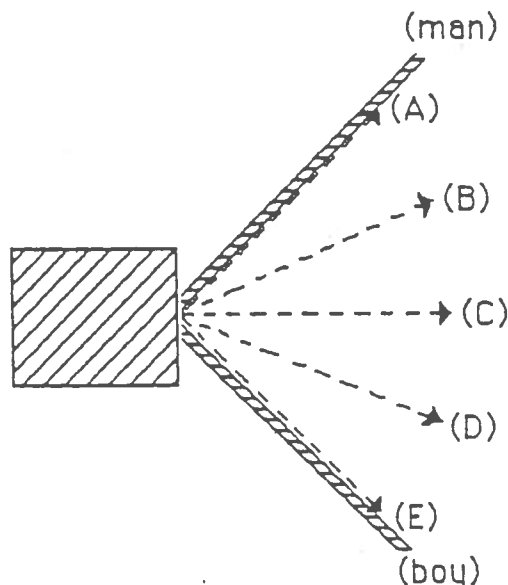
- \* When responding to the following question, assume that any frictional forces due to air resistance are so small that they can be ignored.

18. An elevator, as illustrated, is being lifted up an elevator shaft by a steel cable. When the elevator is moving up the shaft at a constant velocity:



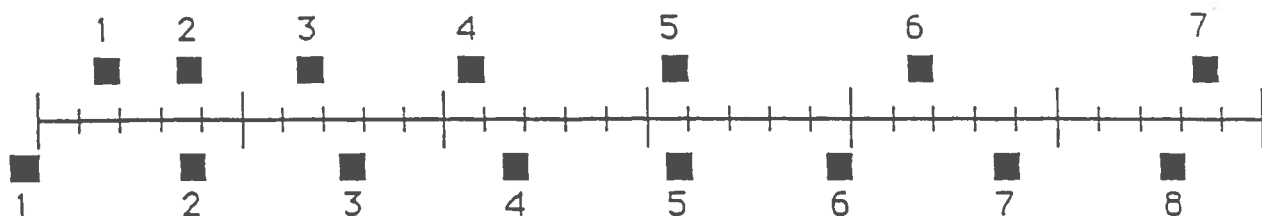
- (A) the upward force on the elevator by the cable is greater than the downward force of gravity.
- (B) the amount of upward force on the elevator by the cable is equal to that of the downward force of gravity
- (C) the upward force on the elevator by the cable is less than the downward force of gravity.
- (D) it goes up because the cable is being shortened, not because of the force being exerted on the elevator by the cable.
- (E) the upward force on the elevator by the cable is greater than the downward force due to the combined effects of air pressure and the force of gravity.

19. Two people, a large man and a boy, are pulling as hard as they can on two ropes attached to a crate, as illustrated in the diagram below. Which of the indicated paths (A-E) would most likely correspond to the path of the crate as they pull it along?



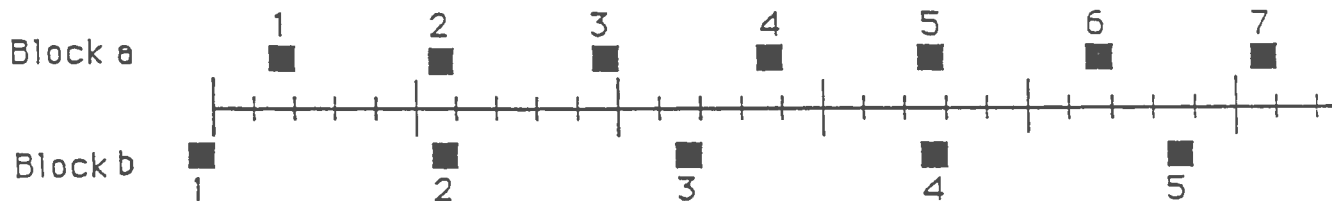


- \* The positions of two blocks at successive 0.20 second time intervals are represented by the numbered squares in the diagram below. The blocks are moving toward the right.



20. Do the blocks ever have the same speed?

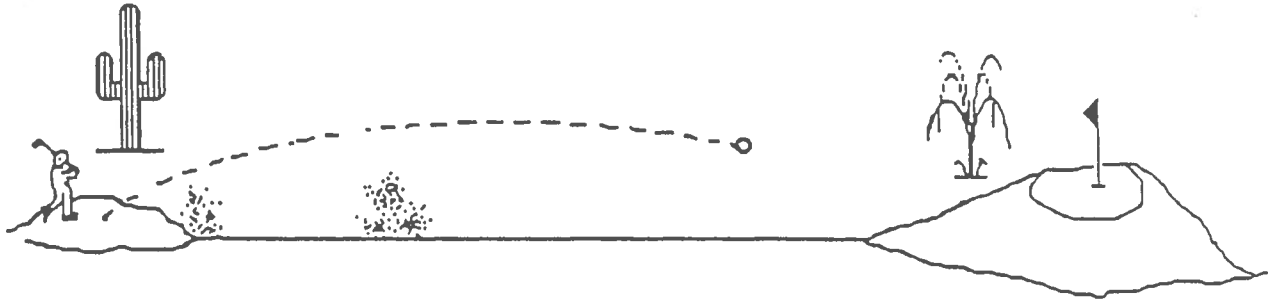
- (A) No.
  - (B) Yes, at instant 2.
  - (C) Yes, at instant 5.
  - (D) Yes, at instant 2 and 5.
  - (E) Yes, at some time during interval 3 to 4.
- \* The positions of two blocks at successive equal time intervals are represented by numbered squares in the diagram below. The blocks are moving toward the right.



21. The acceleration of the blocks are related as follows:

- (A) acceleration of "a" > acceleration of "b"
- (B) acceleration of "a" = acceleration of "b" > 0
- (C) acceleration of "b" > acceleration of "a"
- (D) acceleration of "a" = acceleration of "b" = 0
- (E) not enough information to answer.

22. After being hit, a golf ball driven down a fairway is observed to travel through the air with a trajectory (flight path) similar to that in the depiction below.



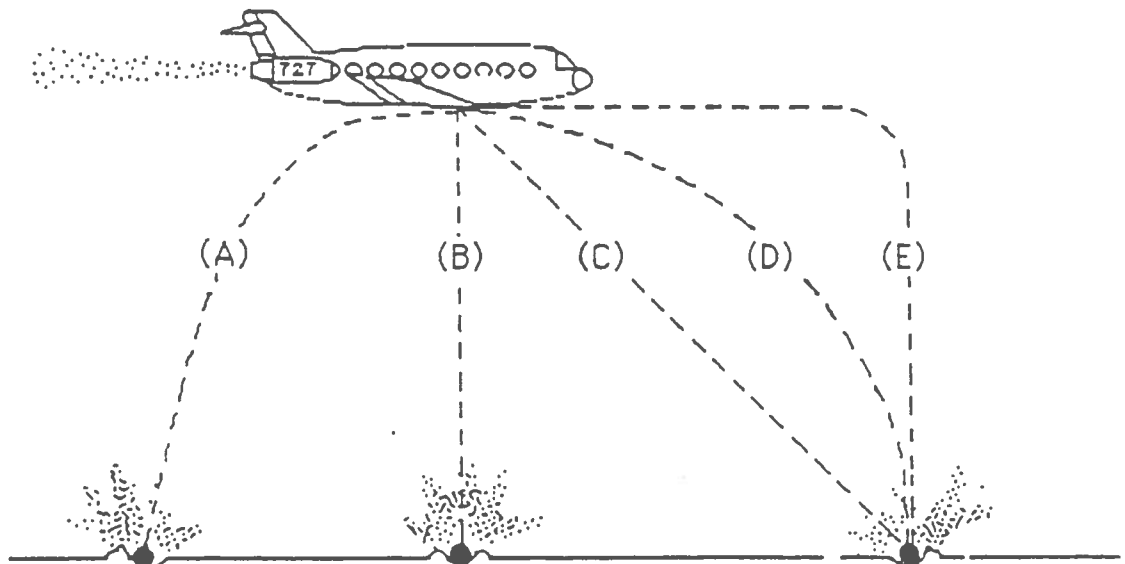
Which following force(s) is(are) acting on the golf ball during its entire flight?

1. the force of gravity
2. the force of the "hit"
3. the force of air resistance

- (A) 1 only  
(B) 1 and 2  
(C) 1, 2, and 3

- (D) 1 and 3  
(E) 2 and 3

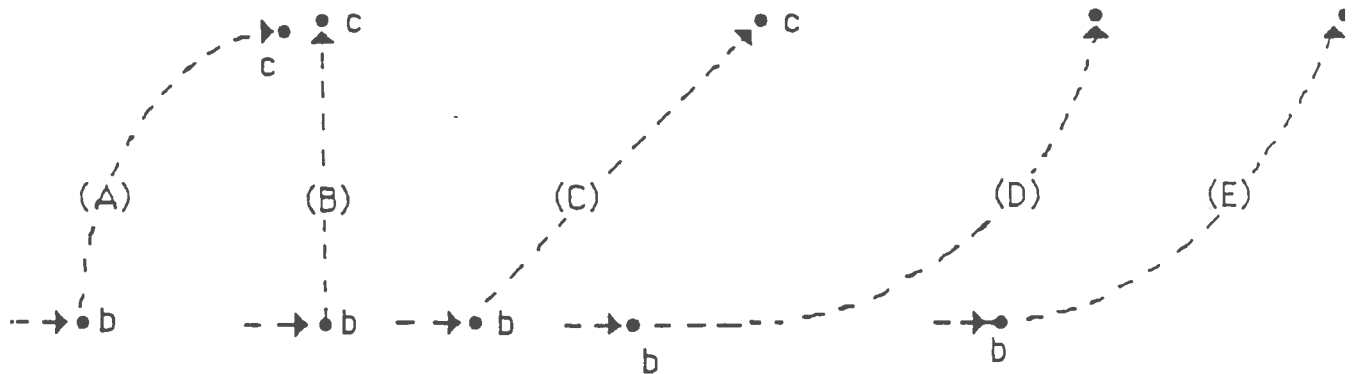
23. A bowling ball accidentally falls out of the cargo bay of an airliner as it flies along in a horizontal direction. As seen from the ground, which path below would the bowling ball most closely follow after leaving the airplane?



- \* When answering the next four questions, refer to the following statement and diagram.
- \* A rocket, drifting sideways in outer space from position "a" to position "b". is subject to no outside forces. At "b", the rocket's engine starts to produce a constant thrust at right angles to line "ab". The engine turns off again as the rocket reaches some point "c".



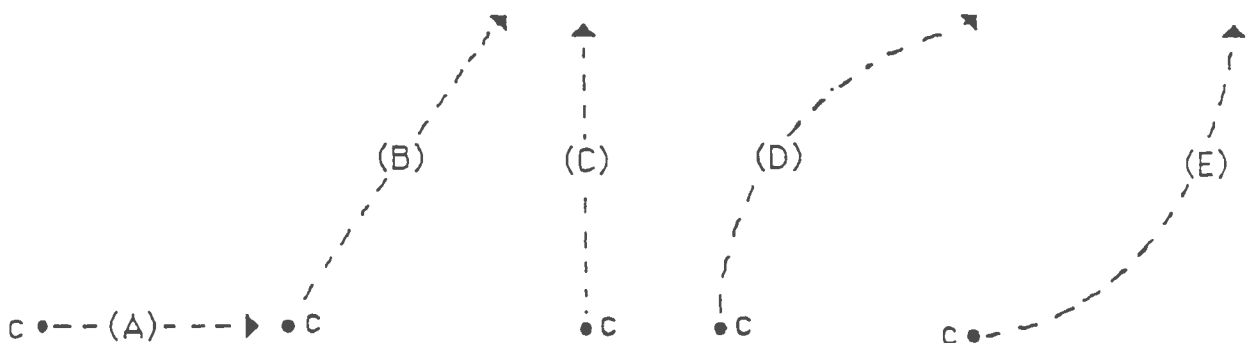
24. Which path below best represents the path of the rocket between "b" and "c"?



25. As the rocket moves from "b" to "c", its speed is;

- (A) constant.
- (B) continuously increasing.
- (C) continuously decreasing.
- (D) increasing for a while and constant thereafter.
- (E) constant for a while and decreasing thereafter.

26. At "c" the rocket's engine is turned off. Which of the paths below will the rocket follow beyond "c"?



27. Beyond "c", the speed of the rocket is;

- (A) constant.
- (B) continuously increasing.
- (C) continuously decreasing.
- (D) increasing for a while and constant thereafter.
- (E) constant for a while and decreasing thereafter.

28. A large box is being pushed across the floor at a constant speed of 4.0 m/s. What can you conclude about the forces acting on the box.

- (A) If the force applied to the box is doubled, the constant speed of the box will increase to 8.0 m/s.
- (B) The force applied to move the box at a constant speed must be more than its weight.
- (C) The force applied to move the box at a constant speed must be just equal to the external forces that resist its motion.
- (D) The force applied to move the box at a constant speed must be more than the external forces that resist its motion.
- (E) There is a force being applied to the box to make it move but the external forces such as friction are not "real" forces they just resist motion.

29. If the force being applied to the box in the preceding problem is suddenly discontinued, the box will;

- (A) stop immediately.
- (B) continue at a constant speed for a very short period of time and then slow to a stop.
- (C) immediately start slowing to a stop.
- (D) continue at a constant velocity.
- (E) increase its speed for a very short period of time, then start slowing to a stop.

## Appendix A

### Ohm's Law

Design and conduct an experiment to test the validity of Ohm's Law. Use multimeters, not the displays on the power supply, for your measurements. The teacher will show you how to use multimeters to measure voltage, current, and resistance.

A good experiment can be done with one power supply, two multimeters, some connecting wires, and two or more resistors used one at a time. In this experiment, do not use the power supply at more than 5.0 volts. Use resistors between  $100\ \Omega$  and  $5\ \text{k}\Omega$ . Do not combine resistors in one circuit. Think about what would be a reasonable number of measurements to make with each resistor.

Each person should turn in a typed or neatly written report containing the four main components of a scientific experiment.

- 1) Hypothesis: The hypothesis should state the goal or idea or prediction of the experiment. Mathematical aspects of the hypothesis should be in mathematical form rather than words. Variables should be defined.
- 2) Procedure: The procedure section should describe exactly what was done so that another person could do the same thing. It should include diagrams. There is no need to include obvious instructions such as "obtain" or "gather" materials.
- 3) Results and analysis: The analysis section should include tables of the data that was collected and all of the calculations.
- 4) Conclusion: The conclusion should state whether the experiment supported the hypothesis or not. Your percent error or percent difference should be discussed. Sources of error (factors outside your control) should also be discussed. Finally, this section should mention any possible improvements to your experiment.

The lab will be graded according to the rubric on the back, so make sure you understand the rubric.

Category	4	3	2	1
Experimental Hypothesis	Hypothesized relationship between the variables is clear and reasonable and is based on what has been studied	Hypothesized relationship has minor flaws in logic or is not clearly expressed, or is not completely based on what has been studied.	Hypothesized relationship is based on flawed logic or is very unclear	No hypothesis is stated
Variables (divide score by 2)	All variables are clearly defined with all relevant details.	All variables are clearly defined with most relevant details, or one variable is missing.	Most variables are clearly defined with most relevant details.	Variables are not defined or the majority lack sufficient detail.
Experimental Design	Experiment is feasible with available equipment and results will support or refute the hypothesis.	Experimental design is adequate to test the hypothesis but leaves some unanswered questions or has practical problems.	Experimental design is relevant to the hypothesis but does not test it completely or is very impractical.	Experimental design is not relevant to the hypothesis or is infeasible.
Replicability	Steps are outlined sequentially and are adequately detailed so that other experimenters can replicate them.	Steps are outlined but are hard to follow, or some details are missing.	Steps are outlined, but there is not enough detail to replicate the procedures, or some steps are missing.	Several steps are not outlined and there is not enough detail to replicate the procedures.
Data	The data are presented accurately, clearly, and informatively in tables and/or graphs. Any calculations are correct and easy to follow.	The data are presented accurately in tables and/or graphs and calculations are correct, but there is some lack of clarity in presentation of data and analysis.	The data are presented accurately and calculations are correct, but presentation is very unclear, possibly because of lack of tables and graphs.	Data and calculations are not shown or are inaccurate.
Conclusion	Conclusion includes whether the findings supported the hypothesis, major sources of error, and possible improvements.	Conclusion has two of the three elements needed or is somewhat unclear or poorly reasoned.	Conclusion has one of the three elements or is very unclear or poorly reasoned.	All three elements are missing or nearly so.

## Appendix B

### Air Resistance

If you drop a feather, its large area-to-weight ratio causes it to reach terminal velocity quickly. Paper coffee filters demonstrate this nicely, since they too have a large area-to-weight ratio. If you drop a couple of filters simultaneously from the same height, they fall together. If you drop a single filter and a double-weight filter—one filter inside another—the heavier one hits the floor first. Our goal is to determine: Is air resistance proportional to speed or to the square of the speed? We can find out by seeing how much higher a double-weight filter should be dropped in order to reach the floor at the same time as a dropped single filter. If an object is traveling at terminal velocity, the force of air resistance,  $R$ , equals the weight of the falling object. Without air resistance, the distance that a falling object travels in a given time is found by  $d = \frac{1}{2}gt^2$ , but at terminal velocity there is no acceleration so the distance traveled in a given time can be found using  $d = v_t t$ , where  $v_t$  is the terminal velocity of the object.

**First Hypothesis:** *Air resistance is proportional to speed.* If air resistance is proportional to the object's speed, then the object's terminal speed must be proportional to its weight. According to this hypothesis, given equal periods of time, a double coffee filter would fall twice as far as a single coffee filter.

**Second Hypothesis:** *Air resistance is proportional to the square of the speed of the object.* If air resistance is proportional to the square of the object's speed, then the object's terminal velocity must be proportional to the square root of the object's weight. According to this hypothesis, in equal periods of time, a double coffee filter would fall  $\sqrt{2}$  times as far as a single coffee filter.

#### Equipment

Coffee filters - 4  
Tape Measure

#### Procedure

Answer the following questions on a separate sheet of paper.

- 1) Give a simple mathematical argument that shows that if the first hypothesis is correct, a double filter would fall twice as far as a single filter in the same time. That is, start from the assumption that air resistance is proportional to speed (which you can write as  $R \sim v$  or  $R = kv$ ) and use what you know about  $v_t$ , to prove mathematically that  $v_t \sim mg$ . As a result, the first hypothesis means the double filter falls twice as far.
- 2) Drop a single filter and a double filter from the same height and at the same time. Did the filters hit the ground at the same time? If they hit the floor at the same time, what would (or does) that show?
- 3) Drop a single filter from a height of 1.00 m above the floor and at the same time drop a double filter from a height of 2.00 m above the floor. Did the filters hit the floor at the same time? If they hit the floor at the same time, what would (or does) that show?
- 4) Drop a single filter from a height of 1.00 m above the floor and at the same time drop a double filter from a height of 1.414 m above the floor. Did the filters hit the floor at the same time? If they hit the floor at the same time, what would (or does) that show?
- 5) By trial and error, before doing any calculations, find the height from which a triple filter will hit the ground at the same time as a single filter dropped from a height of 1.00 m above the floor.

6) Find the theoretical distance that should have made procedure 5) a success. Find the percent error between this distance and the actual distance that you found in procedure 5).

7) Did you divide the work in this lab by having each member of your group do different tasks or by having some members do all of one task, such as measuring or holding filters? How did you make those decisions?



## Appendix C

### A) Acceleration due to Gravity

#### Equipment

Stopwatch

Tape Measure

Golf Ball

#### Procedure

You'll drop your golf ball and measure the height that it bounces to. Think about whether you should measure to the top of the ball or to the bottom of the ball, and write down which you decided on.

Drop the ball from as high as you can reach (without doing anything unreasonable or unsafe). For that trial, find the time aloft for the ball in between the first contact with the ground and the second. Also measure the maximum height that the ball bounces to.

From these two measurements calculate the acceleration due to gravity. There's only one equation you can use; you can figure out which one by noting that you know the distance  $d$  and the time  $t$  and want the acceleration  $a$  or  $g$ . What equation has those three quantities? Since that equation assumes that the initial speed is 0, you're doing the calculation for the fall of the ball from the high point of its bounce, which means you need to divide the time by 2. (We measure it this way because it's easier to start the stopwatch when the ball hits the floor than when it reaches its highest point.)

Do four more trials and for each one find the value of  $g$ . Then take the average of the five  $g$  values. (Don't average your times or heights.) Compare your average value to the accepted value of  $9.79 \text{ m/s}^2$  in Santa Fe by finding the percent error.

#### Error analysis

Discuss any possible sources of error in this experiment. As always in error analysis, concentrate on two kinds of sources. One is the limitations of your measurements. How accurate were the measurements you took, given the equipment and methods you were asked to use?

The other kind of source of error is physical effects not taken into account the calculation you did. What forces could affect the motion of the ball other than gravity and change your measured time from what it would have been if only gravity were acting? Were there things you couldn't control or didn't control well enough that could cause errors?

Think carefully about the results of these sources of error. You may not have dropped the ball from the same height each time—would that throw off your value of  $g$ ? You didn't take air resistance into account in your calculation (since an air-resistance calculation would be beyond the scope of the course)—did that throw off your value of  $g$ ?

Which measurements and which neglected physical effects do you think contributed most to any discrepancy between your answer and the accepted value? If physical effects are significant, can you explain whether neglecting the effect gave you a bigger or a smaller number in your calculation?

Unless you have good reason to believe that you made a miscalculation, don't include miscalculation as a source of error. And don't mention your partners as a source of error! You're responsible for your results as a team.

## B) Projectiles

### Equipment

Hot Wheels track	Photogates - 2
Metal Ball - Steel 1"	Timer
Meter Stick	Masking Tape

### Discussion

When engineers build bridges or skyscrapers they do not do so by trial and error. They must do it right the first time. Your goal in this experiment is to predict where a steel ball will land when released from a certain height on an incline. The final test of your measurements and calculations will be to position an empty can so that the ball lands in the can on the *first and only* attempt. That is, *don't practice getting the ball into the can or see where the ball hits the floor*. Please let me know when you're ready so I can watch your attempt.

### Procedure

- 1) Use a piece of Hot Wheels Track to make a ramp for the ball. Make the ramp as sturdy as possible so that the ball rolls smoothly and reproducibly. One end of the track should be flush with the edge of the table and directly above a drawer. The ball must leave the table horizontally. Make the horizontal part of the ramp at the bottom at least 10 cm long, and raise it far enough off the table so the ball will go through the photogates. The other end of the track should be about 20 cm above the level end. Use masking tape, wood, and books wherever necessary in order to make the ramp sturdy and make sure the photogates detect the ball.
- 2) Set the Photogate to Pulse. Set up the photogate and accessory photogate so that you can measure the time the ball takes to travel from the first moment it reaches the level of the table top (point A) to some point close to the edge of the table (point B). Measure and record the distance between A and B.
- 3) Release the ball from the same height (marked with tape) on the ramp several times so that your timings are consistent. Make sure that the ball lands in the open drawer! Determine and record the average horizontal speed  $v$ , remembering that there's no acceleration while the ball is on the level part of the ramp, so you can use the formula for average speed.
- 4) Measure and record the vertical distance that the ball must drop from the bottom end of the ramp in order to land in the can on the floor. Should you measure to the top of the can or to the floor? (Answer that question in your report.)
- 5) Calculate the theoretical time  $t$  that the ball will spend in the air. Use the known value of  $g$ , and remember that the horizontal motion doesn't affect the vertical motion, so the calculation is the same as if the ball were in free fall from rest.
- 6) The range is the horizontal distance a projectile travels. Predict (by calculating) the range of the ball using the formula  $d = vt$ , where you calculated  $v$  and  $t$  above. You can use this formula because there's no acceleration in the horizontal direction.
- 7) Put your can on the floor at the calculated distance and release the ball from the marked point on your ramp.

### Analysis

Make sure you have shown all of your measurements and calculations so someone else can follow them.

Did your ball land in the can on that first and only attempt? What factors could cause someone's ball to miss the target, or caused your ball to miss the target if it missed?

**Appendix D**  
**Survey of Mad Science**  
**Final Exam**

(Every part counts the same. That is, Scheme 1 is worth 10 points, and Scheme 2 is worth 30 points because it has three parts.)

Scheme 1. As part of a plan to take over the world, a mad scientist designs a giant laser to burn up the White House, the Capitol, and other government buildings around the world. He can make either a blue laser or a yellow laser, each of which will produce the same number of photons. Since he likes yellow, he decides to go with that color, but his loyal assistant Igor says blue would be better. Who's right and why?

Scheme 2. a) As the laser scheme was foiled by Batman and Robin, the scientist builds a nuclear reactor. (He hasn't decided why yet—he just knows he needs one.) The reactor produces a large amount of  ${}_{54}^{135}\text{Xe}$ , which is a beta emitter. What are the atomic number and mass number that this nucleus turns into?

b) The half-life of  ${}_{54}^{135}\text{Xe}$  is 9 hours. If he makes 6.0 kg, how long will it be till he has 0.75 kg left?

c) A beta ray emitted by a Xe nucleus has a wavelength of  $4.14 \times 10^{-19}$  m. What is its momentum?

d) The reactor is cooled by  $2.0 \times 10^6$  kg of water. If it raises the temperature of the water by  $70^\circ\text{C}$ , how much energy did it put into the water?

Scheme 3. a) The scientist now tries to build a giant computer that can answer any question. He asks the computer why sunsets are orange, and the computer says something about some football team in Colorado. What explanation should he program into the computer instead?

b) While trying to fix the computer, he accidentally connects 120 V where it was supposed to have 5 V. This turns the computer into something much more like a resistor with a resistance of  $3.0\ \Omega$ . How much current is now going through the "resistor"?

c) How much power is being dissipated in the "resistor"?

Scheme 4. a) The scientist builds a giant powered boxing glove to punch his enemies. He tells Igor that it can exert a force of  $5.2 \times 10^3$  N on people but it will feel a force of only 10 N. Igor disagrees. Who's right? Explain briefly.

b) Frustrated, the scientist uses the giant boxing glove on Igor. It works, and exerts a force of  $5.2 \times 10^3 \text{ N}$  on Igor, which causes him to accelerate at  $66.7 \text{ m/s}^2$ . What is Igor's mass? Ignore any other forces on him.

c) At that acceleration, how far does Igor travel in  $3.0 \text{ s}$ ?

d) The scientist creates a new assistant in a vat that contains a liquid with the same density as water,  $1000 \text{ kg/m}^3$ . At the bottom of the vat, under  $1.6 \text{ m}$  of the liquid, how strong is the pressure?

Scheme 5. The scientist now builds a spaceship so his assistant can travel to the planet Kepler-22b for reinforcements. The spaceship is supposed to go at a speed of 97% of  $c$ . The trip will take 146 years from the assistant's point of view. (Fortunately, he was built to live a long time.) How long will it take from Earth's point of view?

Scheme 6. a) The scientist tries to invent a shrinking ray to make the world smaller so he can conquer it more conveniently. His plan is to decrease its rotational inertia to half what it was. How long will the day be in hours if he succeeds?

b) Due to a malfunction, the scientist instead makes the Moon's orbit half the size it was before, that is, the Moon is now half as far away from the Earth as it was. What happens to the force the Earth exerts on the Moon? Give an answer with a number.

$c = 3.00 \times 10^8 \text{ m/s}$       $h = 6.63 \times 10^{-34} \text{ J}\cdot\text{s}$   
The mass of the Earth is  $5.98 \times 10^{24} \text{ kg}$ .

**THINK AND EXPLAIN (SYNTHESIS)**

58. You exert a force on a ball when you toss it upward. How long does that force last after the ball leaves your hand?
59. On a long alley, a bowling ball slows down as it rolls. Is any horizontal force acting on the ball? How do you know?
60. If a motorcycle moves with a constant velocity, can you conclude that there is no net force acting on it? How about if it's moving with constant acceleration?
61. Since an object weighs less on the surface of the Moon than on Earth's surface, does it have less inertia on the Moon's surface?
62. Which contains more apples: a 1-pound bag of apples on Earth or a 1-pound bag of apples on the Moon? Which contains more apples: a 1-kilogram bag of apples on Earth or a 1-kilogram bag of apples on the Moon?
63. If gold were sold by weight, would you rather buy it in Denver or in Death Valley? If it were sold by mass, which of these locations makes the best buy? Defend your answers.
64. In an orbiting space vehicle, you are handed two identical boxes, one filled with sand and the other filled with feathers. How can you determine which is which without opening the boxes?
65. Your empty hand is not hurt when it bangs lightly against a wall. Why does it hurt if you're carrying a heavy load? Which of Newton's laws is most applicable here?
66. Does the mass of an astronaut change when he or she is visiting the International Space Station? Defend your answer.
67. Why is a massive cleaver more effective for chopping vegetables than an equally sharp knife?
68. When a junked car is crushed into a compact cube, does its mass change? Its weight? Explain.
69. Gravity on the surface of the Moon is only  $1/6$  as strong as gravity on Earth. What is the weight of a 10-kg object on the Moon and on Earth? What is its mass on each?
70. What happens to the weight reading on a scale you stand on when you toss a heavy object upward?
71. What weight change occurs when your mass increases by 2 kg?
72. What is your own mass in kilograms? Your weight in newtons?
73. A grocery bag can withstand 300 N of force before it rips apart. How many kilograms of apples can it safely hold?
74. A crate remains at rest on a factory floor while you push on it with horizontal force  $F$ . What is the friction force exerted on the crate by the floor? Explain.
75. Explain how Newton's first law of motion can be considered to be a consequence of Newton's second law.
76. When a car is moving in reverse, backing from a driveway, the driver applies the brakes. In what direction is the car's acceleration?
77. The auto in the sketch moves forward as the brakes are applied. A bystander says that during the interval of

braking, the auto's velocity and acceleration are in opposite directions. Do you agree or disagree?



78. Aristotle claimed that the speed of a falling object depends on its weight. We now know that objects in free fall, whatever the gravitational forces on them, undergo the same gain in speed. Why don't differences in their gravitational forces affect their accelerations?
79. When blocking in football, a defending lineman often attempts to get his body under the body of his opponent and push upward. What effect does this have on the friction force between the opposing lineman's feet and the ground?
80. A race car travels along a raceway at a constant velocity of 200 km/h. What horizontal net force acts on the car?
81. Free fall is motion in which gravity is the only force acting. (a) Is a skydiver who has reached terminal speed in free fall? (b) Is a satellite above the atmosphere that circles Earth in free fall?
82. When a coin is tossed upward, what happens to its velocity while ascending? Its acceleration? (Ignore air resistance.)
83. How much force acts on a tossed coin when it is halfway to its maximum height? How much force acts on it when it reaches its peak? (Ignore air resistance.)
84. What is the acceleration of a rock at the top of its trajectory when it has been thrown straight upward? (Is your answer consistent with Newton's second law?)
85. A friend says that, as long as a car is at rest, no forces act on it. What do you say if you're in the mood to correct the statement of your friend?
86. When your car moves along the highway at constant velocity, the net force on it is zero. Why, then, do you have to keep running your engine?
87. What is the net force on a small 1-N apple when you hold it at rest above your head? What is the net force on it after you release it?
88. A "shooting star" is usually a grain of sand from outer space that burns up and gives off light as it enters the atmosphere. What exactly causes this burning?
89. A parachutist, after opening her parachute, finds herself gently floating downward, no longer gaining speed. She feels the upward pull of the harness, while gravity pulls her down. Which of these two forces is greater? Or are they equal in magnitude?
90. How does the force of gravity on a raindrop compare with the air drag the drop encounters when it falls at constant velocity?



## Appendix F

### Sample Sustainability question

What source of energy would you like to see emphasized more in the future? Explain, using at least one fact that was not mentioned in class.

Scoring: Out of 10 points, 2 for naming any energy source, 4 for giving its advantages correctly at the level of the course, 4 for the additional fact.





## Using a Microscope Part I & Comparing Cells Part II

**Pre-lab:** Read and complete page one before coming to class. Also, read background information on the differences between prokaryotic cells and eukaryotic cells (p. 44-45 in your textbook)

### Objectives:

1. Identify and relate functions of the parts on a microscope
2. Demonstrate the proper techniques needed to focus a specimen
3. Be able to differentiate between total magnification and resolution
4. Be able to define total magnification, parfocal, field of view and depth of field
5. Be able to identify cellular structures that can be seen using a compound light microscope
6. Be able to compare and contrast cells between bacteria, euglena, plants and animals

Very few cells can be seen without the aid of a microscope. Man has been adding to the body of knowledge about cells since the 1600's although the cell theory was not formally proposed until 1838 by Matthias Schleiden and Theodore Schwann. Our basis for the unseen world began with observations made by Antonie van Leeuwenhoek in 1648. Using his hand held microscopes. Leeuwenhoek described bacteria scraped from his teeth, "animalcules" from pond water and spermatozoa from a variety of animals. The word cell was coined by Robert Hooke in 1667 when publishing his observations on thin cork sections. The compartments seen in the cork sections reminded Hooke of the cells where monks slept in the monasteries. Technology today has brought us complex electron microscopes that have the resolving power to visualize small molecules. We are still adding and revising the cell theory.

To carry the microscope to and from your lab table, grasp the arm and support the base with two hands. Do not carry anything else at the same time. Blow the loose dust off the lenses and gently clean the ocular and objectives with lens paper. **Never wipe a glass lens with anything other than lens paper.** The ocular and objectives may be cleaned with ethanol if needed. Refer to your text for the types of microscopes and their limitations. (p. 40)

What type of microscope do we use in our lab?

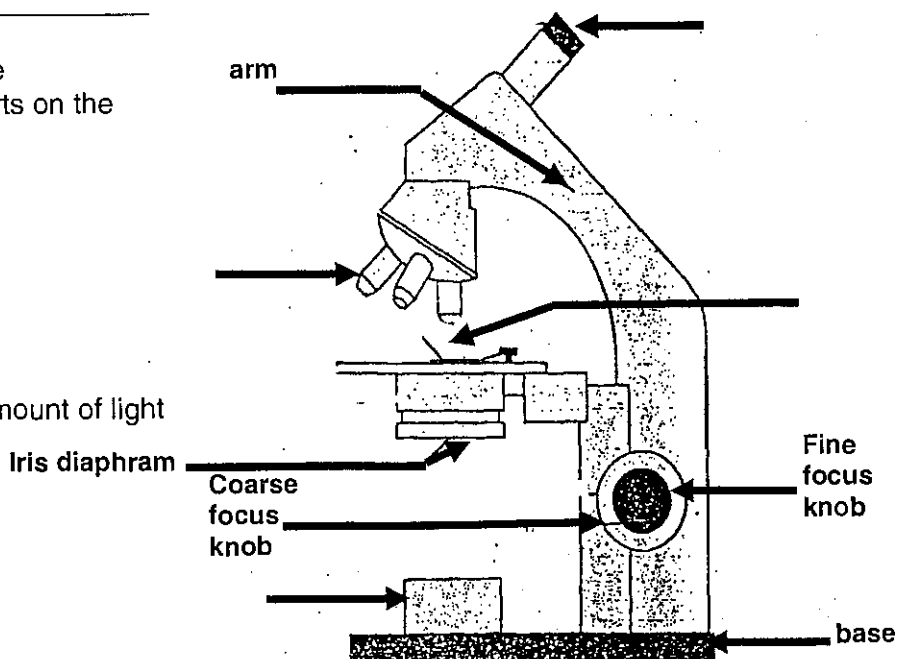
Note the function for each of the following parts and label the parts on the diagram:

Ocular lens:

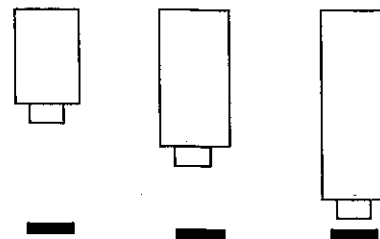
Objective lenses:

Iris diaphragm: regulates the amount of light

Stage:



The **magnifying power** of each objective lens is labeled on its side. The shorter the objective the lower the magnifying power. The lowest power objective is called the scanning objective. The following numbers are imprinted on the side of the scanning objective: DIN 4/0.10. The objective has a black line. The number 4 indicates the magnification of the scanning objective. The 10X objective is the medium power lens (green line) and the 43X is called the high-dry objective (yellow line). The 100X objective (red line) is an oil-immersion objective and must be used with oil.



**The oil-immersion objective will not be used this year in lab.** Label the above objectives that you will be using this semester on the diagram with the correct magnifications.

To find the **total magnification** of an object, multiply the power of the ocular by the power of the objective you are using. The magnifying power of the ocular lens is **10X**.

If you are viewing an object using the 40X objective, what is the total magnification? \_\_\_\_\_

### FOCUS LOW GO HIGH

Always begin using the objective with the lowest magnification. Use the **coarse focus knob** to bring the object into view. The fine focus knob will help obtain the sharpest resolution possible. Once focused at the lower magnification you can move to a higher power. The microscope objectives are **parfocal**. Once an objective has been focused, you can rotate to the next higher objective and the image will remain in coarse focus, requiring only slight movement of the **fine focus knob**. Never use the coarse adjustment knob when focusing on 40X, damage to the objective or slide can result. The field of view is the circle of light you see when looking into the microscope. The higher the total magnification the smaller the field of view will become. You will have to adjust the amount of light using the iris diagram when you go to a higher objective.

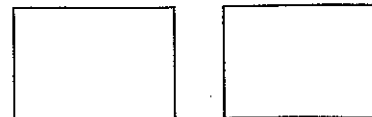
### FIELD OF VIEW

Turn on the lamp. Place a prepared slide of the letter "e" on the stage of your microscope. Using the **lowest** power objective lens and the **coarse adjustment focus knob**, position the lens as close as possible to the stage. Slowly rotate the coarse adjustment until the "e" comes into focus. Be sure you have the "e" in the center of the field of view or you may see nothing. Without adjusting the focus, turn the objective lens to a higher magnification. The image should still be in focus, but you may sharpen it using the fine focus knob. Adjust the level of light to an optimum level.

As you go to higher magnification, what happens to the field of view? \_\_\_\_\_

### ORIENTATION

Using the prepared slide of the letter "e", draw the letter "e" as you positioned it on the stage. Draw the letter "e" as it appears in the microscope.



As you move the slide to the left, what direction does the image move? \_\_\_\_\_

As you move the slide away from you, what direction does the image move? \_\_\_\_\_

As you view the "e" on higher magnification, does the image become sharper or less distinct? \_\_\_\_\_

**Magnification** is an apparent increase in size. **Resolution** is an increase in visible detail. **The higher the total magnification, the lower the resolution will be.**

**DEPTH OF FIELD**

Examine a prepared silk-fiber sequence slide. Be sure to center the hub of fibers (where they cross) before you go to higher magnification. Using the fine focus knob determine the sequence of colors, from top to bottom. Notice not all the threads are focused on the same time using high-dry.

top:

middle:

bottom:

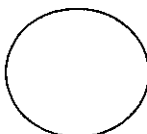
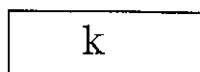
**Lab Questions:**

Match the microscope parts with their functions.

- |                                 |   |
|---------------------------------|---|
| _____ 1) Diaphragm              | a. Brings objects into rapid but not detailed focus |
| _____ 2) Ocular                 | b. Regulates amount of light entering microscope    |
| _____ 3) Medium-power objective | c. Contains a 4X lens that should be used first     |
| _____ 4) High-dry objective     | d. Supports slide                                   |
| _____ 5) Scanning objective     | e. Brings objects into sharp focus                  |
| _____ 6) Stage                  | f. Contains the 10X lens closest to your eye        |
| _____ 7) Coarse focus objective | g. Objective with the smallest field of view        |
| _____ 8) Fine focus objective   | h. Provides 100X magnification if the ocular is 10X |

Answer the following statements as true or false.

- \_\_\_\_\_ 9) Total magnification of a microscope is determined by adding the eyepiece-lens magnification to the objective-lens magnification.
- \_\_\_\_\_ 10) The coarse focus knob adjustment must be used to sharpen focus when using high-power magnification.
- \_\_\_\_\_ 11) The high-dry objective magnifies the image the most but its resolution is not as great as the medium-power objective.
12. How does an image appear under the microscope compared to how you see it on the stage?
13. Why should you never use the coarse adjustment knob when you are using the 40X high-dry objective?
14. Why might the entire slide not be in focus all at the same time when using high-dry?
15. In the circle below, draw the k as it would be seen under the low-power.



## Comparing Cells Part II

**Objective:** What cell structures can be seen with a light microscope? What are the differences and similarities between cells?

You will observe different types of cells. The cell is considered the basic building block of life. A unicellular organism is usually dependent on the versatility of its single cell for all life functions. Cells are the organizational units for multi-cellular organisms. Cells will vary in function and appearance depending on what type of specialization(s) the cell has (have). Cellular structures found within a cell are designed to support specialized functions. **Using your textbook, read background information on the differences between prokaryotic cells and eukaryotic cells (p. 44-45).**

**Caution:** The stains you are using can ruin clothing. Keep the lids on the stains when not using. If a spill occurs notify the instructor immediately for clean up. The lab tops will absorb the stain if the stain is not immediately wiped up and decolorized.

**For all specimens draw a single, sample cell**, indicate the total magnification, and label the structures you see. Possible structures can include: cell wall, limits of the plasma membrane, nucleus, chloroplasts, leucoplasts (amyloplasts or starch storage plastids), central vacuole, cytoplasm, flagella, eye spot. **Fill at least half of the box with the sketch. Be able to identify all of these structures on next week's lab quiz.**

### Bacteria – Eubacteria Domain – prokaryote

1. Remembering to focus low and go high, place a prepared slide of bacteria on the stage. The highest magnification that you will use is the high-dry. Focus only with the fine focus once you reach high-dry. Most bacteria are only a few micrometers long and a little more than a micrometer wide. At this size, only shapes can be differentiated and a few external details if the proper stains are used.
2. The **cell walls** of these bacteria have been stained. No internal detail can be visualized. Basic bacterial shapes are rod, round or spiral shaped. To differentiate between bacteria types different types of media are used to characterize their metabolic differences.
3. Observe several bacteria, sketch and label a single cell. Only sketch what you can observe. Document the total magnification used.
4. What are basic differences between prokaryotic cells the eukaryotic cells?

Total magnification:

### *Euglena* – A protozoan in the Protista kingdom – Eukarya Domain

1. Place a drop of *Euglena* culture in the center of a slide. Add a cover slip.
2. Starting with scanning, focus. Look for motile, green, unicellular organisms. Step through each objective to high-dry, focusing only with the fine focus once you reach high-dry. You will need to adjust the light with the diaphragm with each step up in magnification.
3. These organisms use **flagella** for locomotion. The resolution of the scope does not permit you to visualize the flagella very well.
4. *Euglena* are autotrophic and heterotrophic. The green **chloroplasts** are photosynthetic. These organelles capture visible light energy and use the

Total magnification:

energy to put together molecules of glucose. *Euglena* can also be predatory and capture other unicellular organisms.

5. The red-pigments are **eye-spots** that are light sensitive. In what direction are many of the *Euglena* moving?
6. Observe several **Euglena** and sketch a single composite organism that best represents what you have observed. Label the structures you can identify. Document the total magnification used in your sketch.
7. **Wipe the slide and cover slip dry and re-use them.**

#### **Elodea leaf – Plant kingdom – Eukarya Domain**

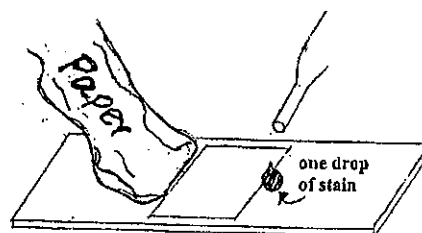
1. Use the diagram of the generalized plant cell in your textbook for reference (p. 49) to help identify structures you might find in an elodea cell. Not all the structures in the diagram are visible using a compound light microscope. Beyond the resolving power of our light microscopes are the plasma membrane, plasmodesma, cytoskeleton, rough ER, smooth ER and Golgi bodies. Mitochondria are about the size of small bacteria and can be visualized only if special stains are used. The cytoplasm is a semi-fluid matrix that supports cell organelles and structures between the plasma membrane and the nuclear membrane.
2. Place a drop of water in the center of a slide. Using forceps remove a leaf from the tip of an *Elodea* sprig and place it in the drop of water on your slide. Add a cover slip.
3. With low power, look for a thin area of the leaf where you can see the cells the best. Change to high power. Observe carefully a single cell for a minute.
4. Draw the cell and label structures you see. Be sure and document the total magnification used.
5. What is the general shape of an elodea cell? Think about the three dimensional nature of cells.

Total magnification:

6. **Wipe the slide and cover slip dry and re-use them.**

#### **Potato cells – Plant kingdom – Eukarya Domain**

1. Use the diagram of the plant cell in your textbook for reference (p. 49).
2. Place a drop of water in the center of a slide. Carefully use a scalpel to cut a paper-thin slice of potato. Remember this is a light microscope and light must pass through the specimen. Place the small, thin slice on the slide and add a cover slip.
3. Focus on low power first. Note the general appearance of the cells.
4. Note the color of the iodine in the bottle. Iodine reacts with starch and forms a purple complex.
5. Stain the cells by adding a drop of iodine stain on the edge of the cover slip. Gently tip the slide and the stain should be drawn under the cover slip. You can help draw the stain under the cover slip by using a paper towel edge as a wick to pull the water and stain from one side of the slide to the other. Remember, water has **adhesive** and **cohesive** properties. Water is a **polar** molecule and is attracted to molecules that are also polar or those compounds that contain weak ionic bonds (ex. NaCl). Water also forms **hydrogen bonds** with other water molecules resulting in cohesion. The stain is attracted to the water and the water is attracted to the paper towel.
6. Focus on low power and then change to high power.
7. Draw a single cell and label structures you see. Be sure and document the magnification used. **Wipe the slide and cover slip dry and re-use them.**
8. What was a major difference observed between the elodea and the potato cells? What accounts for the difference?



Total magnification:

**Human epithelial cells – Animal kingdom – Eukarya Domain**

1. Use the diagram of the generalized animal cell in your textbook for reference (p. 49). Remember not all of the structures in the diagram can be seen using a compound light microscope (See Elodea Step 1).
2. Place a drop of water in the center of a slide. Gently rub the inside lining of your cheek with the flat edge of a toothpick. Mix the material on the toothpick in the drop of water. **Immediately** dispose of the toothpick in the beaker of 10% bleach solution provided. Add a cover slip to the slide.
3. Put a drop of methylene blue stain on the edge of the cover slip. Follow the guidelines for staining that were used with the potato. Focus on low power first and then change to high power.
4. Draw a single cell and label structures you see. Be sure and document the magnification used.
5. Dispose of the slide and cover slip in the beaker of 10% bleach solution.

Total magnification:

**Human blood cells – Animal kingdom – Eukarya Domain**

1. Place a prepared slide of blood cells on the scope. Focus low and go to high-dry.
2. There are several types of blood cells in this smear. Two types of stains have been used. The red blood cells (RBCs) will appear pink and the different types of white blood cells (WBCs) will stain purple.
3. Compare the size of the RBCs to the varying size ranges of the WBCs. If your observational skills and patience are good you can find five different types of white blood cells. Each WBC type has a different job protecting you from infection and each has different cellular characteristics.
4. What major difference do you notice between the RBCs and WBCs? As cells mature, cell structures can disappear and undergo developmental changes. One type of stem cell can produce many different types of cell lines. All the different types of blood cells you observed on this slide came from a single type of stem cell found in bone marrow.
5. Sketch a RBC and a WBC. Label structures that are visible.

Total magnification:

**Additional Questions:**

1. Would you expect unicellular, eukaryotic cells such as *Euglena* to be more complex or less complex than cells found in a multicellular organism? Why?
2. What structure was observed in *Elodea* cells and not in any other cell? What is the main function of this structure?

3. What was the structure found only in potato cells and not in any other cells. From the results of the stain what is the inferred function of the above structure?
  
4. Compare the shape of the potato and Elodea cells to the shape of the cheek cells. What accounts for the difference between the plant cells and the animal cells?
  
5. Methylene blue and iodine are two examples of many stains used when observing cells with the compound light microscope. What was the function of these stains? Why are stains usually necessary in making cellular observations?
  
6. Why don't all cells have the same type of organelles?
  
7. What organelles provide color to *Elodea* and *Euglena*?

Summary of major organelles and cell structures – Check the structures present for the following.

	Nucleus	Plasma Membrane	Cytoplasm	Cell Wall	Chloroplasts
Bacteria					
Euglena					
Elodea					
Epithelial Cheek cells					

Score/Grade:

## Piano Performance Rubric

Name \_\_\_\_\_ Date \_\_\_\_\_

Title \_\_\_\_\_ (Include any other information to clearly identify the piece, such as composer, book, page number, publisher, or edition)

The teacher considers the performer's ability, experience, and length of study/preparation time when marking this rubric. The checked boxes indicate the areas being assessed during this performance.

Teacher Signature:

	Pitch <input type="checkbox"/>	Rhythm <input type="checkbox"/>	Dynamics, Articulation, Expression <input type="checkbox"/> D <input type="checkbox"/> A <input type="checkbox"/> E	Tempo <input type="checkbox"/>	Fingering <input type="checkbox"/>	Performance Presence <input type="checkbox"/>
<b>Excellent (90-100)</b>	All Pitches were played correctly.	All rhythm were played correctly.	All prescribed (score/teacher) dyn/art/exp marks were performed correctly.	Played in appropriate and/or consistent tempo.	All prescribed fingering (score/teacher) was played correctly.	Performed with confidence and without hesitation.
<b>Good (80-89)</b>	Almost all pitches were played correctly, but with a few errors	Almost all rhythms were played correctly. Few errors.	Almost all prescribed (score/teacher) dyn/art/exp marks were played correctly. A few of the marks were not clearly performed.	Played in a generally appropriate and/or consistent tempo.	Almost all prescribed fingering was played correctly.	Performed with confidence but with a little hesitation.
<b>Fair (70-79)</b>	Many pitches played correctly, but with several errors.	Many rhythms were played correctly, but with several errors.	Many prescribed (score/teacher) dyn/art/exp marks were played correctly, but with several inconsistencies.	Played in a minimally acceptable tempo but demonstrated some inconsistencies.	Some of the fingering was correct, but the overall impression was inconsistent.	Performed with several moments of hesitation, but was able to complete selection.
<b>Poor (60-69)</b>	Some pitches played correctly, but with many errors.	Some rhythms were played correctly, but with many errors.	Some prescribed (score/teacher) dyn/art/exp marks were played correctly. Many or key marks were not followed. Showed a lack of understanding of the meaning of the marks.	Played in a tempo that was not prescribed (score/teacher).	Prescribed fingering (score/teacher) was not followed.	Performed with many moments of hesitation and was unable to complete selection.



<b>Unacceptable (below 60)</b>	Did not know the pitches.	Did not know the rhythms.	None of the prescribed (score/teacher) dyn/art/exp marks were followed.	Demonstrated a lack of understanding of tempo in music.	Demonstrated a lack of understanding of appropriate fingering.	Demonstrated a lack of any preparation.
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**COMMENTS:**

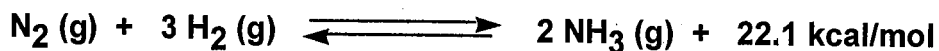
Equilibrium II Homework

Name \_\_\_\_\_

The equilibrium constant ( $K_p$ ) is  $3.1 \times 10^3$ , at  $430^\circ\text{C}$ , for the reaction  
$$\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$$

1. Starting with 0.100 atm HI (g) only, what will be the equilibrium partial pressures of  $\text{H}_2$ ,  $\text{I}_2$  and HI?
  
  
  
  
  
  
  
  
  
  
2. Starting with 0.0100 atm  $\text{H}_2$  and 0.0100 atm  $\text{I}_2$  only, what will be the equilibrium partial pressures of  $\text{H}_2$ ,  $\text{I}_2$  and HI?
  
  
  
  
  
  
  
  
  
  
3. Starting with 0.0100 atm  $\text{H}_2$ , 0.0100 atm  $\text{I}_2$  and 0.100 atm HI,
  - (a) calculate the reaction quotient,  $Q$
  - (b) which way will the reaction proceed, to the left or to the right?
  - (c) calculate the equilibrium partial pressures of  $\text{H}_2$ ,  $\text{I}_2$  and HI.

4. For the following reaction, determine the effect of each of the following changes on both the measured (forward) *rate* of reaction and the *equilibrium* position. Include a brief explanation your reasoning.



increase in temperature:

RATE OF REACTION –	increase	decrease	no change
EQUILIBRIUM SHIFT –	right	left	no shift

increase in pressure:

RATE OF REACTION –	increase	decrease	no change
EQUILIBRIUM SHIFT –	right	left	no shift

increase in [H<sub>2</sub>]:

RATE OF REACTION –	increase	decrease	no change
EQUILIBRIUM SHIFT –	right	left	no shift

increase in [NH<sub>3</sub>]:

RATE OF REACTION –	increase	decrease	no change
EQUILIBRIUM SHIFT –	right	left	no shift

addition of a catalyst:

RATE OF REACTION –	increase	decrease	no change
EQUILIBRIUM SHIFT –	right	left	no shift

# 5

# The Cell: Transport Mechanisms and Cell Permeability

## Learning Outcomes

- ▶ Define *selective permeability*, and explain the difference between active and passive transport processes.
- ▶ Define *diffusion*, and explain how simple diffusion and facilitated diffusion differ.
- ▶ Define *osmosis*, and explain the difference between isotonic, hypotonic, and hypertonic solutions.
- ▶ Define *filtration*, and discuss where it occurs in the body.
- ▶ Define *vesicular transport*, and describe phagocytosis, pinocytosis, receptor-mediated endocytosis, and exocytosis.
- ▶ List the processes that account for the movement of substances across the plasma membrane, and indicate the driving force for each.
- ▶ Determine which way substances will move passively through a selectively permeable membrane when given appropriate information about their concentration gradients.

## Pre-Lab Quiz



Instructors may assign these and other Pre-Lab Quiz questions using Mastering A&P™

1. Circle the correct underlined term. A passive process, diffusion / osmosis is the movement of solute molecules from an area of greater concentration to an area of lesser concentration.
2. A solution surrounding a cell is *hypertonic* if:
  - a. it contains fewer nonpenetrating solute particles than the interior of the cell
  - b. it contains more nonpenetrating solute particles than the interior of the cell
  - c. it contains the same amount of nonpenetrating solute particles as the interior of the cell
3. Which of the following would require an input of energy?
  - a. diffusion
  - b. filtration
  - c. osmosis
  - d. vesicular transport
4. Circle the correct underlined term. In pinocytosis / phagocytosis, parts of the plasma membrane and cytoplasm extend and engulf a relatively large or solid material.
5. Circle the correct underlined term. In active / passive processes, the cell provides energy in the form of ATP to power the transport process.

Go to Mastering A&P™ > Study Area to improve your performance in A&P Lab.



> Lab Tools > Pre-Lab Videos  
> Diffusion and Osmosis



Instructors may assign new Building Vocabulary coaching activities, Pre-Lab Quiz questions, Art Labeling activities, Pre-Lab Video Coaching Activities for Diffusion and Osmosis, PhysioEx activities, and more using the Mastering A&P™ Item Library.

## Materials

### Passive Processes

#### Diffusion of Dye Through Agar Gel

- ▶ Petri dish containing 12 ml of 1.5% agar-agar
- ▶ Millimeter-ruled graph paper
- ▶ Wax marking pencil
- ▶ 3.5% methylene blue solution (approximately 0.1 M) in dropper bottles
- ▶ 1.6% potassium permanganate solution (approximately 0.1 M) in dropper bottles
- ▶ Medicine dropper

Text continues on next page. →

*Diffusion and Osmosis Through Nonliving Membranes*

- ▶ Four dialysis sacs
- ▶ Small funnel
- ▶ 25-ml graduated cylinder
- ▶ Wax marking pencil
- ▶ Fine twine or dialysis tubing clamps
- ▶ 250-ml beakers
- ▶ Distilled water
- ▶ 40% glucose solution
- ▶ 10% sodium chloride (NaCl) solution
- ▶ 40% sucrose solution
- ▶ Laboratory balance
- ▶ Paper towels
- ▶ Hot plate and large beaker for hot water bath
- ▶ Benedict's solution in dropper bottle
- ▶ Silver nitrate ( $\text{AgNO}_3$ ) in dropper bottle
- ▶ Test tubes in rack, test tube holder

*Experiment 1*

- ▶ Deshelled eggs
- ▶ 400-ml beakers
- ▶ Wax marking pencil
- ▶ Distilled water
- ▶ 30% sucrose solution
- ▶ Laboratory balance
- ▶ Paper towels

## ▶ Graph paper

## ▶ Weigh boat

*Experiment 2*

- ▶ Clean microscope slides and coverslips
- ▶ Medicine dropper
- ▶ Compound microscope
- ▶ Vials of mammalian blood obtained from a biological supply house or veterinarian—at option of instructor
- ▶ Freshly prepared physiological (mammalian) saline solution in dropper bottle
- ▶ 5% sodium chloride solution in dropper bottle
- ▶ Distilled water
- ▶ Filter paper
- ▶ Disposable gloves
- ▶ Basin and wash bottles containing 10% household bleach solution
- ▶ Disposable autoclave bag
- ▶ Paper towels

*Diffusion Demonstrations*

## 1. Diffusion of a dye through water

Prepared the morning of the laboratory session with setup time noted. Potassium permanganate crystals are placed in a 1000-ml graduated cylinder, and distilled water is added slowly and with as little turbulence as possible to fill to the 1000-ml mark.

## 2. Osmometer

Just before the laboratory begins, the broad end of a thistle tube is closed with a selectively permeable dialysis membrane, and the tube is secured to a ring stand. Molasses is added to approximately 5 cm above the thistle tube bulb, and the bulb is immersed in a beaker of distilled water. At the beginning of the lab session, the level of the molasses in the tube is marked with a wax pencil.

*Filtration*

- ▶ Ring stand, ring, clamp
- ▶ Filter paper, funnel
- ▶ Solution containing a mixture of uncooked starch, powdered charcoal, and copper sulfate ( $\text{CuSO}_4$ )
- ▶ 10-ml graduated cylinder
- ▶ 100-ml beaker
- ▶ Lugol's iodine in a dropper bottle

**Active Processes**

- ▶ Video/animation showing phagocytosis (if available)

**Note to the Instructor:** See directions for handling wet mount preparations and disposable supplies (p. 25, Exercise 3).

**PEX** PhysioEx™ 9.1 Computer Simulation Ex. 1 on p. PEX-3.

**B**ecause of its molecular composition, the plasma membrane is selective about what passes through it. It allows nutrients to enter the cell but keeps out undesirable substances. By the same token, valuable cell proteins and other substances are kept within the cell, and excreta or wastes pass

to the exterior. This property is known as **selective**, or **differential, permeability**. Transport through the plasma membrane occurs in two basic ways. In **passive processes**, concentration or pressure differences drive the movement. In **active processes**, the cell provides energy (ATP) to power the transport process.

## Passive Processes

The two important passive processes of membrane transport are *diffusion* and *filtration*. Diffusion is an important transport process for every cell in the body. By contrast, filtration usually occurs only across capillary walls.

### Diffusion

Molecules possess **kinetic energy** and are in constant motion. As molecules move about randomly at high speeds, they collide and ricochet off one another, changing direction with each collision (**Figure 5.1**). A **concentration gradient** is present when molecules are unevenly distributed, resulting in an area of higher concentration and an area of lower concentration. **Diffusion** is the movement of molecules from a region of their higher concentration to a region of their lower concentration. Because the driving force for diffusion is the kinetic energy of the molecules, the speed of diffusion depends on molecular

size and temperature. Smaller molecules move faster, and molecules move faster as temperature increases.

There are many examples of diffusion in nonliving systems. For example, if a bottle of ether were uncorked at the front of the laboratory, very shortly thereafter you would be nodding off as the molecules became distributed throughout the room.

In general, molecules diffuse passively through the plasma membrane if they can dissolve in the lipid portion of the membrane, as  $\text{CO}_2$  and  $\text{O}_2$  can. The unassisted diffusion of solutes (dissolved substances) through a selectively permeable membrane is called **simple diffusion**.

Certain molecules, glucose for example, are transported across the plasma membrane with the assistance of a protein carrier molecule. The substances move by a passive transport process called **facilitated diffusion**. As with simple diffusion,

the substances move from an area of higher concentration to one of lower concentration, that is, down their concentration gradients.

## Osmosis

The flow of water across a selectively permeable membrane is called **osmosis**. During osmosis, water moves down its concentration gradient. The concentration of water is inversely related to the concentration of solutes. If the solutes can diffuse across the membrane, both water and solutes will move down their concentration gradients through the membrane. If the particles in solution are nonpenetrating solutes (prevented from crossing the membrane), water alone will move by osmosis and in doing so will cause changes in the volume of the compartments on either side of the membrane.

## Diffusion of Dye Through Agar Gel and Water

The relationship between molecular weight and the rate of diffusion can be examined easily by observing the diffusion of two different types of dye molecules through an agar gel. The dyes used in this experiment are methylene blue, which has a molecular weight of 320 and is deep blue in color, and potassium permanganate, a purple dye with a molecular weight of 158. Although the agar gel appears quite solid, it is primarily (98.5%) water and allows the dye molecules to move freely through it.

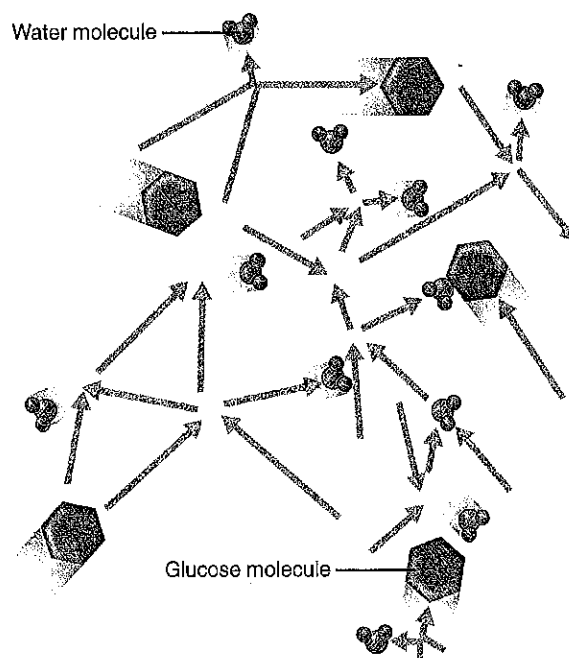
### Activity 1

#### Observing Diffusion of Dye Through Agar Gel

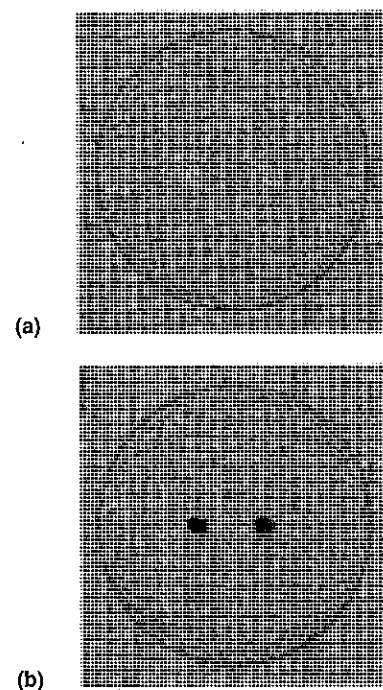
1. Work with members of your group to formulate a hypothesis about the rates of diffusion of methylene blue and potassium permanganate through the agar gel. Justify your hypothesis.
2. Obtain a petri dish containing agar gel, a piece of millimeter-ruled graph paper, a wax marking pencil, dropper bottles of methylene blue and potassium permanganate, and a medicine dropper.
3. Using the wax marking pencil, draw a line on the bottom of the petri dish dividing it into two sections. Place the petri dish on the ruled graph paper.
4. Create a well in the center of each section using the medicine dropper. To do this, squeeze the bulb of the medicine dropper, and push it down into the agar. Release the bulb as you slowly pull the dropper vertically out of the agar. This should remove an agar plug, leaving a well in the agar. (See Figure 5.2a.)
5. Carefully fill one well with the methylene blue solution and the other well with the potassium permanganate solution (Figure 5.2b).

Record the time. \_\_\_\_\_

6. At 15-minute intervals, measure the distance the dye has diffused from each well by measuring the diameter of the dye. Continue these observations for 1 hour, and record the results in the **Activity 1 chart** (p. 54).



**Figure 5.1** Random movement and numerous collisions cause molecules to become evenly distributed.



**Figure 5.2** Comparing diffusion rates. Agar-plated petri dish as it appears after the placement of 0.1 M methylene blue in one well and 0.1 M potassium permanganate in another.

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**Activity 1: Dye Diffusion Results**

Time (min)	Diameter of methylene blue (mm)	Diameter of potassium permanganate (mm)
15		
30		
45		
60		

Which dye diffused more rapidly? \_\_\_\_\_

What is the relationship between molecular weight and rate of molecular movement (diffusion)?  
\_\_\_\_\_Why did the dye molecules move? \_\_\_\_\_  
\_\_\_\_\_**Activity 2****Observing Diffusion of Dye Through Water**

1. Go to the diffusion demonstration area, and observe the cylinder containing dye crystals and water set up at the beginning of the lab.

2. Measure the number of millimeters the dye has diffused from the bottom of the graduated cylinder, and record.

\_\_\_\_\_ mm

3. Record the time the demonstration was set up and the time of your observation. Then compute the rate of the dye's diffusion through water and record below.

Time of setup \_\_\_\_\_

Time of observation \_\_\_\_\_

Rate of diffusion \_\_\_\_\_ mm/min

**Activity 3**

Instructors may assign a related Pre-Lab Video Coaching Activity using Mastering A&P™

**Investigating Diffusion and Osmosis Through Nonliving Membranes**

The following experiment provides information on the movement of water and solutes through selectively permeable membranes called dialysis sacs. Dialysis sacs have pores of a particular size. The selectivity of living membranes depends on more than just pore size, but using the dialysis sacs will allow you to examine selectivity due to this factor.

1. Read through the experiments in this activity, and develop a hypothesis for each part.

2. Obtain four dialysis sacs, a small funnel, a 25-ml graduated cylinder, a wax marking pencil, fine twine or dialysis tubing clamps, and four beakers (250 ml). Number the beakers 1 to 4 with the wax marking pencil, and half fill all of them with

distilled water except beaker 2, to which you should add 125 ml of the 40% glucose solution.

3. Prepare the dialysis sacs one at a time. Using the funnel, half fill each with 20 ml of the specified liquid (see Activity 3 chart). Press out the air, fold over the open end of the sac, and tie it securely with fine twine or clamp it. Before proceeding to the next sac, rinse it under the tap, and quickly and carefully blot the sac dry by rolling it on a paper towel. Weigh it with a laboratory balance. Record the weight in the **Activity 3 chart**, and then drop the sac into the corresponding beaker. Be sure the sac is completely covered by the beaker solution, adding more solution if necessary. **Figure 5.3** illustrates the configuration of the breakers with the contents of the dialysis sacs and the beaker solutions.

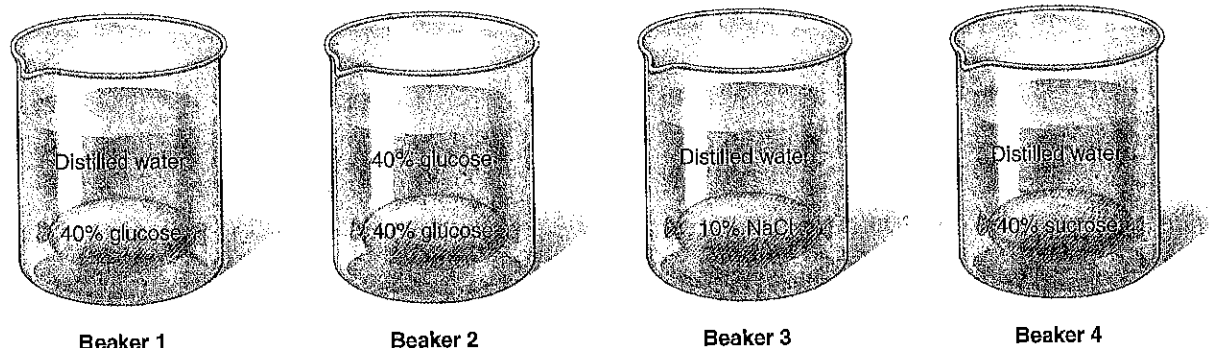


Figure 5.3 Setup for observing diffusion through nonliving membranes.

Activity 3: Experimental Data on Diffusion and Osmosis Through Nonliving Membranes						
Beaker	Contents of sac	Initial weight	Final weight	Weight change	Tests— beaker fluid	Tests— sac fluid
Beaker 1 ½ filled with distilled water	Sac 1, 20 ml of 40% glucose solution				Benedict's test:	Benedict's test:
Beaker 2 ½ filled with 40% glucose solution	Sac 2, 20 ml of 40% glucose solution					
Beaker 3 ½ filled with distilled water	Sac 3, 20 ml of 10% NaCl solution				AgNO <sub>3</sub> test:	
Beaker 4 ½ filled with distilled water	Sac 4, 20 ml of 40% sucrose solution				Benedict's test:	

- Sac 1: 40% glucose solution
- Sac 2: 40% glucose solution
- Sac 3: 10% NaCl solution
- Sac 4: 40% sucrose solution

Allow the sacs to remain undisturbed in the beakers for 1 hour. Use this time to continue with other experiments.

4. After an hour, boil a beaker of water on the hot plate. Obtain the supplies you will need to determine your experimental results: dropper bottles of Benedict's solution and silver nitrate solution, a test tube rack, four test tubes, and a test tube holder.

5. Quickly and gently blot sac 1 dry and weigh it. (**Note:** Do not squeeze the sac during the blotting process.) Record the weight in the data chart.

Was there any change in weight? \_\_\_\_\_

Conclusions: \_\_\_\_\_

\_\_\_\_\_

Place 5 drops of Benedict's solution in each of two test tubes. Put 4 ml of the beaker fluid into one test tube and 4 ml of the sac fluid into the other. Mark the tubes for identification, and then place them in a beaker containing boiling water. Boil 2 minutes. Cool slowly. If a green, yellow, or rusty red precipitate forms, the test is positive, meaning that glucose is present. If the solution remains the original blue color, the test is negative. Record results in the data chart.

Was glucose still present in the sac? \_\_\_\_\_

Was glucose present in the beaker? \_\_\_\_\_

Conclusions: \_\_\_\_\_

\_\_\_\_\_

6. Blot gently and weigh sac 2. Record the weight in the data chart.

Was there an *increase* or *decrease* in weight? \_\_\_\_\_

With 40% glucose in the sac and 40% glucose in the beaker, would you expect to see any net movement of water (osmosis) or of glucose molecules (simple diffusion)?

\_\_\_\_\_ Why or why not? \_\_\_\_\_

\_\_\_\_\_

7. Blot gently and weigh sac 3. Record the weight in the data chart.

Was there any change in weight? \_\_\_\_\_

Conclusions: \_\_\_\_\_

\_\_\_\_\_

Take a 5-ml sample of beaker 3 solution and put it in a clean test tube. Add a drop of silver nitrate (AgNO<sub>3</sub>). The appearance of a white precipitate or cloudiness indicates the presence of silver chloride (AgCl), which is formed by the reaction of AgNO<sub>3</sub> with NaCl (sodium chloride). Record results in the data chart.

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Results: \_\_\_\_\_

Conclusions: \_\_\_\_\_

8. Blot gently and weigh sac 4. Record the weight in the data chart.

Was there any change in weight? \_\_\_\_\_

Conclusions: \_\_\_\_\_

Take a 1-ml sample of beaker 4 solution and put the test tube in boiling water in a hot water bath. Add 5 drops of Benedict's solution to the tube and boil for 5 minutes. The presence of glucose (one of the hydrolysis products of sucrose) in the test tube is indicated by the presence of a green, yellow, or rusty colored precipitate.

Did sucrose diffuse from the sac into the water in the small beaker? \_\_\_\_\_

Conclusions: \_\_\_\_\_

9. In which of the test situations did net osmosis occur?

\_\_\_\_\_

In which of the test situations did net simple diffusion occur?

\_\_\_\_\_

What conclusions can you make about the relative size of glucose, sucrose, NaCl, and water molecules?

\_\_\_\_\_

\_\_\_\_\_

With what cell structure can the dialysis sac be compared?

\_\_\_\_\_

10. Prepare a lab report for the experiment. (See Getting Started, on MasteringA&P.) Be sure to include in your discussion the answers to the questions proposed in this activity.

## Activity 4

### Observing Osmometer Results

Before leaving the laboratory, observe the *osmometer demonstration* set up before the laboratory session to follow the movement of water through a membrane (osmosis). Measure the distance the water column has moved during the laboratory period, and record below. (The position of the meniscus [the surface of the water column] in the thistle tube at the beginning of the laboratory period is marked with wax pencil.)

Distance the meniscus has moved: \_\_\_\_\_ mm

Did net osmosis occur? Why or why not?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Activity 5

### Investigating Diffusion and Osmosis Through Living Membranes

To examine permeability properties of plasma membranes, conduct the following experiments. As you read through the experiments in this activity, develop a hypothesis for each part.

#### Experiment 1

1. Obtain two deshelled eggs and two 400-ml beakers. Note that the relative concentration of solutes in deshelled eggs is about 14%. Number the beakers 1 and 2 with the wax marking pencil. Half fill beaker 1 with distilled water and half fill beaker 2 with 30% sucrose.

2. Carefully blot each egg by rolling it gently on a paper towel. Place a weigh boat on a laboratory balance and tare the balance (that is, make sure the scale reads 0.0 with the weigh boat on the scale). Weigh egg 1 in the weigh boat, record the initial weight in the **Activity 5 chart**, and gently place it into beaker 1. Repeat for egg 2, placing it in beaker 2.

3. After 20 minutes, remove egg 1 and gently blot it and weigh it. Record the weight, and replace it into beaker 1. Repeat for egg 2, placing it into beaker 2. Repeat this procedure at 40 minutes and 60 minutes.

4. Calculate the change in weight of each egg at each time period, and enter that number in the data chart. Also calculate the percent change in weight for each time period and enter that number in the data chart.

Activity 5: Experiment 1 Data from Diffusion and Osmosis Through Living Membranes						
Time	Egg 1 (in distilled H <sub>2</sub> O)	Weight change	% Change	Egg 2 (in 30% sucrose)	Weight change	% Change
Initial weight (g)		—	—		—	—
20 min						
40 min						
60 min						

How has the weight of each egg changed?

Egg 1 \_\_\_\_\_

Egg 2 \_\_\_\_\_

Make a graph of your data by plotting the percent change in weight for each egg versus time.

How has the appearance of each egg changed?

Egg 1 \_\_\_\_\_

Egg 2 \_\_\_\_\_

A solution surrounding a cell is **hypertonic** if it contains more nonpenetrating solute particles than the interior of the cell. Water moves from the interior of the cell into a surrounding hypertonic solution by osmosis. A solution surrounding a cell is **hypotonic** if it contains fewer nonpenetrating solute particles than the interior of the cell. Water moves from a hypotonic solution into the cell by osmosis. In both cases, water moved down its concentration gradient. Indicate in your conclusions whether distilled water was a hypotonic or hypertonic solution and whether 30% sucrose was hypotonic or hypertonic.

Conclusions: \_\_\_\_\_

\_\_\_\_\_

## Experiment 2

Now you will conduct a microscopic study of red blood cells suspended in solutions of varying tonicities. The objective is to determine whether these solutions have any effect on cell shape by promoting net osmosis.

1. The following supplies should be available at your laboratory bench to conduct this experimental series: two clean slides and coverslips, a vial of mammalian blood, a medicine dropper, physiological saline, 5% sodium chloride solution, distilled water, filter paper, and disposable gloves.



Wear disposable gloves at all times when handling blood (steps 2–5).

2. Place a very small drop of physiological saline on a slide. Using the medicine dropper, add a small drop of the blood to the saline on the slide. Tilt the slide to mix, cover with a coverslip, and immediately examine the preparation under the high-power lens. Notice that the red blood cells retain their normal smooth disclike shape (**Figure 5.4a**, p. 58). This is because the physiological saline is **isotonic** to the cells. That is, it contains a concentration of nonpenetrating solutes (e.g., proteins and some ions) equal to that in the cells (same solute/water concentration). Consequently, the cells neither gain nor lose water by osmosis. Set this slide aside.

3. Prepare another wet mount of the blood, but this time use 5% sodium chloride (saline) solution as the suspending medium. Carefully observe the red blood cells under high power. What is happening to the normally smooth disc shape of the red blood cells?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

This crinkling-up process, called **crenation**, is due to the fact that the 5% sodium chloride solution is hypertonic to the cytosol of the red blood cell. Under these circumstances, water leaves the cells by osmosis. Compare your observations to the figure above (Figure 5.4b).

4. Add a drop of distilled water to the edge of the coverslip. Fold a piece of filter paper in half and place its folded edge at the opposite edge of the coverslip; it will absorb the saline solution and draw the distilled water across the cells. Watch the red blood cells as they float across the field. Describe the change in their appearance.

\_\_\_\_\_

\_\_\_\_\_

Distilled water contains no solutes (it is 100% water). Distilled water and very dilute solutions (that is, those containing less than 0.9% nonpenetrating solutes) are hypotonic to the cell. In a hypotonic solution, the red blood cells first "plump up"

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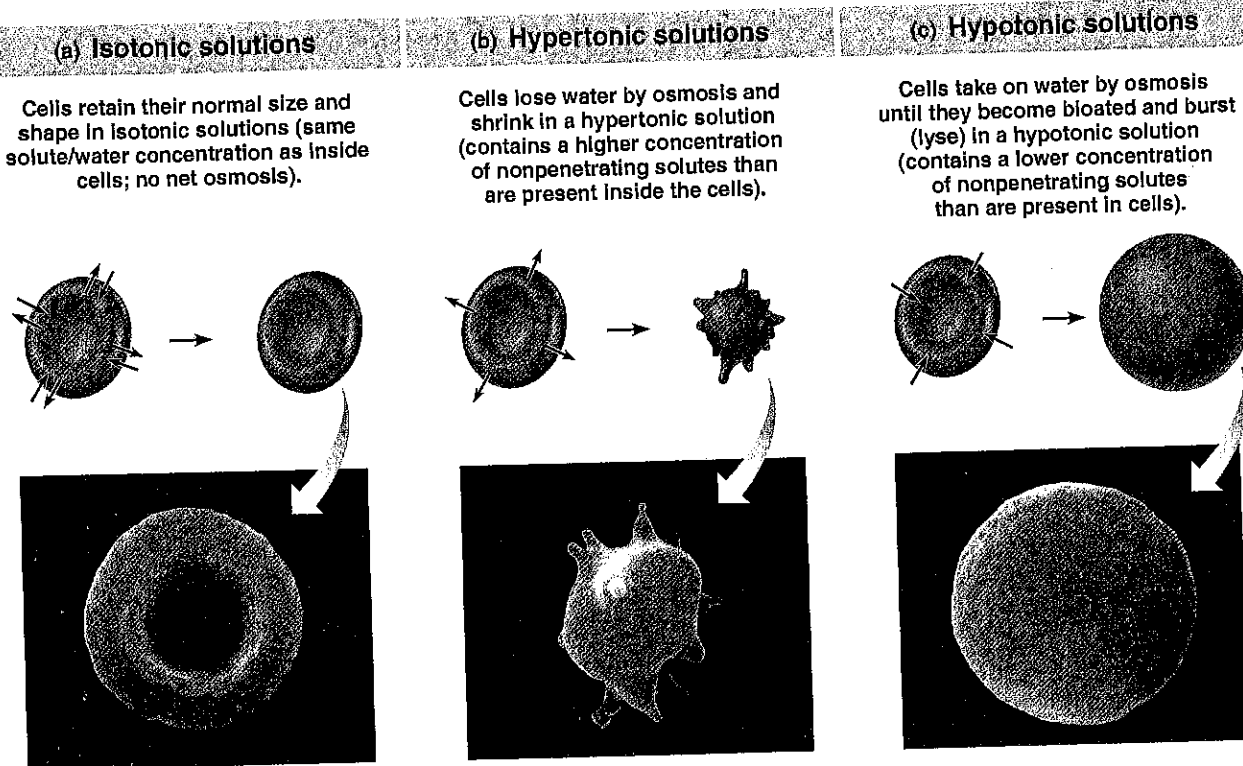


Figure 5.4 Influence of isotonic, hypertonic, and hypotonic solutions on red blood cells.

Instructors may assign this figure as an Art Labeling Activity using Mastering A&P™

(Figure 5.4c), but then they suddenly start to disappear. The red blood cells burst as the water floods into them, leaving "ghosts" in their wake—a phenomenon called **hemolysis**.



5. Place the blood-soiled slides and test tube in the bleach-containing basin. Put the coverslips you used into the disposable autoclave bag. Obtain a wash (squirt) bottle containing 10% bleach solution, and squirt the

bleach liberally over the bench area where blood was handled. Wipe the bench down with a paper towel wet with the bleach solution, and allow it to dry before continuing. Remove gloves, and discard in the autoclave bag.

6. Prepare a lab report for experiments 1 and 2. (See Getting Started, on MasteringA&P.) Be sure to include in the discussion answers to the questions proposed in this activity.

## Filtration

Filtration is a passive process in which water and solutes are forced through a membrane by hydrostatic (fluid) pressure. For example, fluids and solutes filter out of the capillaries in the kidneys and into the kidney tubules because the blood pressure

in the capillaries is greater than the fluid pressure in the tubules. Filtration is not selective. The amount of filtrate (fluids and solutes) formed depends almost entirely on the pressure gradient (difference in pressure on the two sides of the membrane) and on the size of the membrane pores.

## Activity 6

### Observing the Process of Filtration

1. Obtain the following equipment: a ring stand, ring, and ring clamp; a funnel; a piece of filter paper; a beaker; a 10-ml graduated cylinder; a solution containing uncooked starch, powdered charcoal, and copper sulfate; and a dropper bottle of Lugol's iodine. Attach the ring to the ring stand with the clamp.

2. Fold the filter paper in half twice, open it into a cone, and place it in a funnel. Place the funnel in the ring of the ring stand and place a beaker under the funnel. Shake the starch solution, and fill the funnel with it to just below the top of the filter paper. When the steady stream of filtrate changes to countable filtrate drops, count the number of drops formed in 10 seconds and record.

\_\_\_\_\_ drops

When the funnel is half empty, again count the number of drops formed in 10 seconds, and record the count.

\_\_\_\_\_ drops

3. After all the fluid has passed through the filter, check the filtrate and paper to see which materials were retained by the paper. If the filtrate is blue, the copper sulfate passed. Check both the paper and filtrate for black particles to see whether the charcoal passed. Finally, using a 10-ml graduated cylinder,

put a 2-ml filtrate sample into a test tube. Add several drops of Lugol's iodine. If the sample turns blue/black when iodine is added, starch is present in the filtrate.

Passed: \_\_\_\_\_

Retained: \_\_\_\_\_

What does the filter paper represent? \_\_\_\_\_

During which counting interval was the filtration rate greatest? \_\_\_\_\_

Explain: \_\_\_\_\_

What characteristic of the three solutes determined whether or not they passed through the filter paper?

## Active Processes

Whenever a cell uses the bond energy of ATP to move substances across its boundaries, the process is an *active process*. Substances moved by active means are generally unable to pass by diffusion. They may not be lipid soluble; they may be too large to pass through the membrane channels; or they may have to move against rather than with a concentration gradient. There are two types of active processes: *active transport* and *vesicular transport*.

### Active Transport

Like carrier-mediated facilitated diffusion, **active transport** requires carrier proteins that combine specifically with the transported substance. Active transport may be primary, driven directly by hydrolysis of ATP, or secondary, driven indirectly by energy stored in ionic gradients. In most cases, the substances move against concentration or electrochemical gradients or both. These substances are insoluble in lipid and too large to pass through membrane channels but are necessary for cell life.

### Vesicular Transport

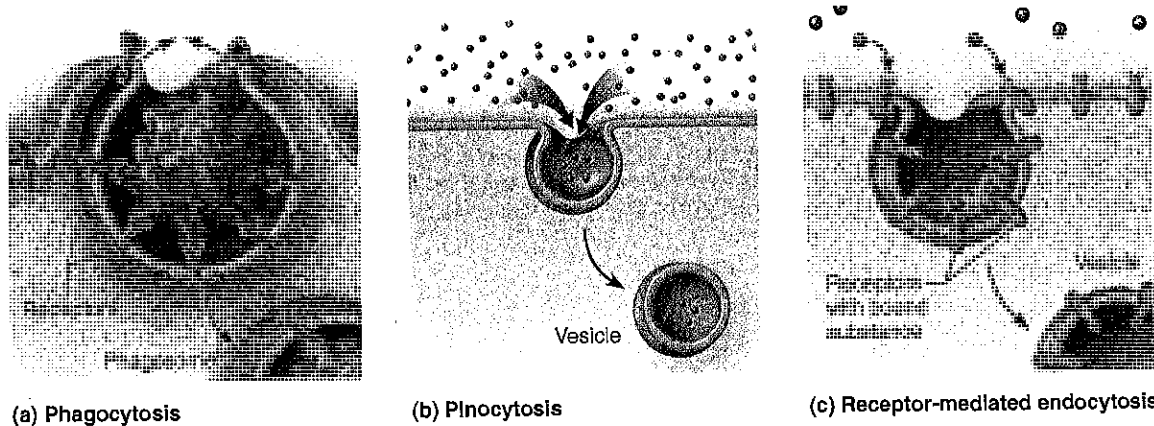
In **vesicular transport**, fluids containing large particles and macromolecules are transported across cellular membranes inside membranous sacs called *vesicles*. Like active transport, vesicular transport moves substances into the cell (**endocytosis**) and out of the cell (**exocytosis**). Vesicular transport requires energy,

usually in the form of ATP, and all forms of vesicular transport involve protein-coated vesicles to some extent.

There are three types of endocytosis: phagocytosis, pinocytosis, and receptor-mediated endocytosis. In **phagocytosis** ("cell eating"), the cell engulfs some relatively large or solid material such as a clump of bacteria, cell debris, or inanimate particles (Figure 5.5a, p. 60). When a particle binds to receptors on the cell's surface, cytoplasmic extensions called pseudopods form and flow around the particle. This produces a vesicle called a *phagosome*. In most cases, the phagosome then fuses with a lysosome and its contents are digested. Indigestible contents are ejected from the cell by exocytosis.

In **pinocytosis** ("cell drinking"), also called **fluid-phase endocytosis**, the cell "gulps" a drop of extracellular fluid containing dissolved molecules (Figure 5.5b). Since no receptors are involved, the process is nonspecific. Unlike phagocytosis, pinocytosis is a routine activity of most cells, allowing them a way of sampling the extracellular fluid. It is particularly important in cells that absorb nutrients, such as cells that line the intestines.

The main mechanism for *specific* endocytosis of most macromolecules is **receptor-mediated endocytosis** (Figure 5.5c). The receptors for this process are plasma membrane proteins that bind only certain substances. This exquisitely selective mechanism allows cells to concentrate material that is present only in small amounts in the extracellular fluid. The ingested vesicle may fuse with a lysosome that either digests or releases



**Figure 5.5 Three types of endocytosis.** (a) In phagocytosis, cellular extensions flow around the external particle and enclose it within a phagosome. (b) In pinocytosis, fluid and dissolved solutes enter the cell in a tiny vesicle. (c) In receptor-mediated endocytosis, specific substances attach to cell-surface receptors and enter the cell in protein-coated vesicles.

Instructors may assign this figure as an Art Labeling Activity using Mastering A&P™

its contents, or it may be transported across the cell to release its contents by exocytosis. The latter case is common in endothelial cells lining blood vessels because it provides a quick means to get substances from blood to extracellular fluid. Substances taken up by receptor-mediated endocytosis include enzymes, insulin and some other hormones, cholesterol (attached to a transport protein), and iron.

**Exocytosis** is a vesicular transport process that ejects substances from the cell into the extracellular fluid. The substance to be removed from the cell is first enclosed in a protein-coated vesicle called a **secretory vesicle**. In most cases, the vesicle migrates to the plasma membrane, fuses with it, and then ruptures, spilling its contents out of the cell. Exocytosis is used for hormone secretion, neurotransmitter release, mucus secretion, and ejection of wastes.

## Activity 7

### Observing Phagocytosis

Go to the video viewing area and watch the video demonstration of phagocytosis (if available).

**Note:** If you have not already done so, complete Activity 2 (Observing Diffusion of Dye Through Water, p. 54) and Activity 4 (Observing Osmometer Results, p. 56).

# 5

## REVIEW SHEET

# The Cell: Transport Mechanisms and Permeability



Instructors may assign a portion of the Review Sheet questions using Mastering A&P™

Name \_\_\_\_\_ Lab Time/Date \_\_\_\_\_

Choose all answers that apply to questions 1 and 2, and place their letters on the response blanks to the right.

1. The movement of molecules \_\_\_\_\_

- a. reflects the kinetic energy of molecules
- b. reflects the potential energy of molecules
- c. is ordered and predictable
- d. is random and erratic

2. Speed of molecular movement \_\_\_\_\_

- a. is higher in larger molecules
- b. is lower in larger molecules
- c. increases with increasing temperature
- d. decreases with increasing temperature
- e. reflects kinetic energy

3. Summarize below the results of Activity 3, Investigating Diffusion and Osmosis Through Nonliving Membranes.

Sac 1: 40% glucose suspended in distilled water

Did glucose diffuse out of the sac? \_\_\_\_\_ Did the sac weight change? \_\_\_\_\_

Explanation: \_\_\_\_\_

Sac 2: 40% glucose suspended in 40% glucose

Was there net movement of glucose into or out of the sac? \_\_\_\_\_

Explanation: \_\_\_\_\_

Did the sac weight change? \_\_\_\_\_

Explanation: \_\_\_\_\_

Sac 3: 10% NaCl suspended in distilled water

Was there net movement of NaCl out of the sac? \_\_\_\_\_

Direction of net osmosis: \_\_\_\_\_

Sac 4: 40% sucrose suspended in distilled water

Was there net movement of sucrose out of the sac? \_\_\_\_\_

Explanation: \_\_\_\_\_

Direction of net osmosis: \_\_\_\_\_

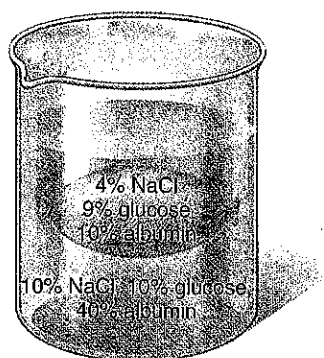
4. What single characteristic of the selectively permeable membranes *used in the laboratory* determines the substances that can pass through them? \_\_\_\_\_

In addition to this characteristic, what other factors influence the passage of substances through living membranes?

\_\_\_\_\_

\_\_\_\_\_

5. A semipermeable sac filled with a solution containing 4% NaCl, 9% glucose, and 10% albumin is suspended in a solution with the following composition: 10% NaCl, 10% glucose, and 40% albumin. The diagram below illustrates the solutes inside and outside of the sac. Assume that the sac is permeable to all substances except albumin. With respect to net movement, state whether each of the following will (a) move into the sac, (b) move out of the sac, or (c) not move.



glucose: \_\_\_\_\_ albumin: \_\_\_\_\_

water: \_\_\_\_\_ NaCl: \_\_\_\_\_

6. Summarize below the results of Activity 5, Experiment 1 (Investigating Diffusion and Osmosis Through Living Membranes—the egg). List and explain your observations.

Egg 1 in distilled water: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Egg 2 in 30% sucrose: \_\_\_\_\_

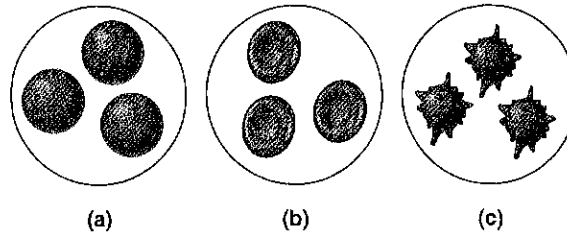
\_\_\_\_\_

\_\_\_\_\_

7. The diagrams below represent three microscope fields containing red blood cells. Which field contains a hypertonic solution?

\_\_\_\_\_ The cells in this field are said to be \_\_\_\_\_. Which field contains an isotonic bathing solution? \_\_\_\_\_

Which field contains a hypotonic solution? \_\_\_\_\_ What is happening to the cells in this field? \_\_\_\_\_



8. What determines whether a transport process is active or passive?

\_\_\_\_\_

9. Characterize membrane transport as fully as possible by choosing all the phrases that apply and inserting their letters on the answer blanks.

Passive processes: \_\_\_\_\_ Active processes: \_\_\_\_\_

- a. account for the movement of fats and respiratory gases through the plasma membrane
- b. include phagocytosis and pinocytosis
- c. include osmosis, simple diffusion, and filtration
- d. occur against concentration and/or electrical gradients
- e. use hydrostatic pressure or molecular energy as the driving force

10. For the osmometer demonstration (Activity 4), explain why the level of the water column rose during the laboratory session.

\_\_\_\_\_  
\_\_\_\_\_

11. Name one similarity and one difference between simple diffusion and osmosis.

\_\_\_\_\_  
\_\_\_\_\_

12. Name one similarity and one difference between simple diffusion and facilitated diffusion.

\_\_\_\_\_  
\_\_\_\_\_

13. Name one similarity and one difference between pinocytosis and receptor-mediated endocytosis. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

14. Many classroom protocols for extracting DNA from cheek cells instruct students to swish an isotonic sports drink in their mouths as they gently scrape the inside of the mouth with the teeth. Why would it be better to use an isotonic sports drink than plain

water? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



15. **+** Drinking too much plain water in a short period of time can result in water intoxication. As a result, blood plasma will become hypotonic. What effect do you think this would have on cells, and why? \_\_\_\_\_

16. **+** Receptor-mediated endocytosis is used to remove low-density lipoproteins (LDLs) from circulating in the blood. Explain the effect that defective LDL receptors would have on a patient's cholesterol levels and overall risk for heart disease. (Hint: LDLs are the "bad cholesterol.")

## Instructions: Research Report

Write a 2 ½ - 3 page (800 to 975 words) single-spaced research report on ONE of the following topics:

- A more fully developed and researched report of the topic you wrote about in your personal report (ie. Report 1: Exposition of your Technical Self)  
OR
- One of the topics from McMurrey's (n.d.) *Online Technical Writing: Report Topic Ideas* (<https://www.tu-chemnitz.de/phil/english/sections/linguist/independent/kursmaterialien/TechComm/tcmtopic.html>)

## Sources

- A minimum of three (3) high quality sources are required to be integrated and cited in the report using APA research writing style and documentation format.
- Conduct both WWW and CCC research. At least one source must be from the library Databases. You may always use more Database sources. The others can be from the WWW or from books. Yes, you may use video/media sources such as from Ted.com, PBS.org, or Youtube (if reputable). All sources must be credible.

## How to organize the report:

Please organize your research report as you would a general report. Use the following headings to organize the writing. Please see the example linked above so you can see what the report can look like.

- **Introduction:** Introduce the topic: What is the topic you researched? Why is it of interest to you and to a broader audience, locale, or context? What is the research question you asked? How did you answer it (thesis)? Or, said differently, what issue, problem, or concern did you research, why and to whom is it important, and what did you discover about it? Explain. At the end of the introduction, a thesis or guiding point should be written that evidence in the body of your review/report will answer.
- **Method:** Explain how you went about conducting research and why you chose your sources.
- **Discussion:** This section should provide the background of evidence in support of your thesis statement and should include the following:
  - What did three or more writers/researchers say about the topic?
  - With which research writers do you agree/disagree?
  - What do you think in general or overall? That is, what are your educated opinions in response to the research?

Please use formal APA style to integrate, quote, paraphrase, and cite sources. This includes accurate in-text citations and an accurate References page.

- **Conclusion/Recommendations:** Your opinions and thoughts about the issue, problem, or concern. For instance, where do you see this topic going? Or, what decisions have you made regarding this topic? Any advice for readers? Etc.

## Rubric

Final Report		
Criteria	Ratings	Pts
Introduction: Background of the project is illuminated, such as purpose and intent, and there is a Research Question.		10.0 pts
Research Method: Discusses the kinds of sources used and why those were chosen. Mentions any difficulties or biases that might have affected the research process.		5.0 pts
Discussion: This section is 1 1/2 to 2 pages and reports the findings. - There is a thesis statement which directly answers the Research Question. - Paragraphs are an appropriate length, flow smoothly, and support the thesis.		20.0 pts
Conclusion or Recommendation: Suggests a course of action or offers closure.		5.0 pts
APA format: 3 or more outside sources cited accurately in-text.		10.0 pts
APA format: Sources are cited accurately on an attached References page.		10.0 pts
Grammar, Sentence Structure, Clarity, Conciseness: The document is free of errors, is easy to read, meets fog index requirements, etc.		30.0 pts
Design: Organization, queing, chunking, with appropriate white space and font sizes. General, overall visual appeal. If graphics are used, they are appropriately positioned.		10.0 pts
		Total Points: 100.0

# Appendix One

General Biology

Bio 1110

+ Bio 1110L

## General Biology 111L – Lab on Mitosis

1) Examine a slide of whitefish blastula. What is a blastula? \_\_\_\_\_

\_\_\_\_\_

Draw a cell in Metaphase and another in Anaphase. Label the chromosomes, spindle fibers, aster rays and the other structures you see..

2) Look at a slide of an onion (*Allium*) root tip. Draw the five stages of the cell cycle.

3) The purpose of the last part of this laboratory is to determine the length of each stage of the cell cycle in actively dividing cells. Assume that the total length of the cell cycle in *Allium* (onion) root tip cells is 40 hours.

Count three fields of view, recording how many cells you find in each stage. Be sure to select parts of the root tip where lots of cells are undergoing mitosis. Your lab partner can record while you observe and then vice versa. Use the mitosis posters to help you identify the stages.

Record the total number of cells you counted. This is usually between 400 and 1000 cells.

Publish your results (total cells counted and number of cells in each stage) on the blackboard.

Calculate the % cells in interphase, prophase, metaphase, anaphase and telophase using just your data. How long was each stage?

Use the compiled class data to calculate the % of cells in each stage and the length of each stage.

Compare your results with the compiled data. Were there significant differences? What were they?

Why was there so much variation in results between the different groups of counters?

How do the class results compare to the literature's results regarding the length of the stages of the cell cycle.

Hand in your report in two weeks.

# Appendix Two

General Biology  
Bio 1110  
+ Bio 1150 L

## Student Presentations for Biology 111 debates – September, 2018

- 1) Make sure your technology is working well in the room before your presentation.
- 2) No need to go high tech. but this is an opportunity to learn how to do a power point presentation.
- 3) Each speaker should present for 5 to 10 minutes – no more than 15 minutes.
- 4) Your hand-out should be clear and simple – no more than four sides including the basic outline of the topic, your key arguments, references and diagrams. Each group prepares one handout. Pros and Cons on one handout.
- 5) Use at least one peer-reviewed source from the library.
- 6) Consult with a SFCC librarian.
- 7) Include at least two references per side (2 pro. 2 con) on your hand-out.
- 8) Hand in your draft hand-out one week before your presentation.
- 9) Coordinate with your debate partners so you do not repeat the same points.

### Topics:

- 1) Climate change is being caused by humans. It is a very serious problem.
- 2) Scientists should be allowed to modify the human genome. CRISPR – CAS9
- 3) We should be allowed to sell genetically modified organisms in our grocery stores. Nothing can go wrong.
- 4) The EPA is a menace to economic growth.
- 5) We should be able to use embryonic stem cells for research.
- 6) We should get rid of the Endangered Species Act.

Topics 1 through 3 will be presented on Tuesday, Nov. 13th.

Topics 4 through 6 will be presented on Tuesday, Nov. 20th.



American National Government  
**POLS1120**

...

TR 11:00am-12:15pm, Martinez 160

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Professor: Joel Blaxland, PhD  
Office: GRC 207  
Office Hours: TR 12:30-3:00pm, or by appointment  
Email: [Joel.Blaxland@wnmu.edu](mailto:Joel.Blaxland@wnmu.edu)  
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***Course Catalog Description***

This course is a basic introduction to American politics and a general consideration of American national government from theoretical, structural, and functional points of view. The American political system established by the *Framers* is based on separation of powers; checks and balances; and overlapping centers of political control. The system seeks to balance elite and mass interests against power and participation. Since inception, the American political system has dealt with contradictions between political ideals and institutions; experienced tension between liberty and equality; and wrestled with the ambiguity in the very concept of democracy itself.

***Course Instructional Objectives***

Over the semester we will test the continued viability of the American political system as we consider the institutional framework, the values it embodies, and its performance. To that end, our attention will primarily focus on achieving the following student learning outcomes:

- 1) Students will be able to discuss the historical and political foundations of the United States government.
- 2) Students will be able to explain the precursors to, and the development and adoption of the *US Constitution*.
- 3) Students will be able to discuss the US federal system, the basics of federalism, and the changing relationship of state and federal power.
- 4) Students will be able to describe the power, structure, and operation of the main institutions of the US government; including the legislative, executive, judicial, and federal bureaucracy.
- 5) Students will be able to discuss the development and the role of political parties and interest groups.
- 6) Students will be able to identify the constitutional basis of civil rights and civil liberties and their changing interpretation.
- 7) Students will be able to describe the role of demographics, public opinion, and the media in American Politics.

By the end of this course, you should have the tools that will permit you to participate intelligently in ongoing debates about American Politics. Furthermore, the course will give you a foundation for other courses in American Politics (AP). It does that not only by giving you a



theoretical and topical overview, but also by introducing social scientific methods and approaches. Finally, this class will develop your habits of critical reading, thinking, writing, and speaking.

Although this course is introductory in the sense that it does not assume prior coursework, it is not easy. I have set high expectations. The readings are substantial and often difficult, but fear not!—I will help you meet the challenge.

\*\*\*

### ***Expectations and Attendance Policy***

You will develop your skills in critical analysis within a seminar setting—where you are expected to take charge of your learning and engage with other students (and me) in a process of knowledge creation through lecture, practice, inquiry, deliberation, criticism, and problem solving. The success of this class depends on you taking increasing responsibility for your development as an engaged and critical thinker, reader, and writer. To succeed in this course you should:

- Attend class regularly, on time, and remain the entire period.
- Do the readings before class and arrive prepared to discuss the material.
- Participate in class discussions, both whole and small group.
- Be respectful of your fellow students. Remember this is an academic classroom. Please listen to and respond to the opinions of others with courtesy, even (especially) when you disagree with them.

Attendance will be taken at the outset of each class meeting. You are permitted to have three (3) unexcused absences before I will start deducting points. ***Each additional unexcused absence (beyond the permitted three) will result in a 5 percentage-point deduction per absence of your overall course grade.*** For example, if your final grade for the course was a 93% and you had one unexcused absence (beyond the permitted three), your grade will be reduced to an 88%. If you had two unexcused absences (beyond the permitted three), your grade will be reduced 5 percentage-points for each, which will result in a reduction from a 93% to an 83%.

### ***Syllabus***

Considerable time and care were taken in the construction of this syllabus. Please read it carefully and thoroughly—it contains most everything you need to know in order to do well in this course. While normally a rare occurrence, the syllabus is subject to change. Any changes will be announced in advance and an updated version of the syllabus will always be available on the course's Canvas site. ***Changes to the syllabus will never require you to do additional work or reschedule work earlier than their stated date. Any changes will be to your benefit.***

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### ***Evaluative Criteria***

Your grade in the course will be determined by the aggregation of the following:

***Verbal Participation (10%):*** Grading class participation has been shown to send positive signals to students about the kind of learning and intellectual engagement a professor values; such as growth

in critical thinking, active learning, development of listening and communication skills, and the ability to contribute *appropriate and germane information* to a conversation. Moreover, research has demonstrated students with a high grade orientation favorably value evaluative criteria that are visibly graded (Marrano 1988, 137; Janzow and Eison, 1990). When students understand that their classroom participation is being graded regularly and consistently, it has been shown they will adjust their study habits accordingly to favor preparedness. As such, you are expected to actively participate in class discussions, of your own accord—though you should also expect random *cold-calling* where you will be asked to give definitions, explain relationships, or respond to questions.

*Quizzes (10%)*: Weekly quizzes will concentrate on the assigned readings. Quiz questions will most often be variants of those provided in the syllabus in advance of the weekly readings. Your responses to quiz questions should not be a summary of the readings but should rather demonstrate your ability to reflect on and personalize, the theories, concepts, and/or ideas you encountered. Your viewpoints and interpretations should be insightful, relevant, and empirically supported with clear, detailed examples, as applicable.

*Group Work (10%)*: Most weeks you will break into groups and address a specific question, imaginary scenario, or current event—and a give presentation of your work (time permitting). You are required to participate equitably during weekly group work. The goal here is to have you, as a group, think critically about a specified topic. You might do this by comparing authors' questions or approaches to other assigned readings; proposing an alternative hypothesis or argument; evaluating research designs; discussing connections to readings from previous weeks; or considering the implications of findings for other political contexts. One copy of your group memo must be handed in at the conclusion of class.

*Exams (50%)*: There will be two exams: 1) one 50 question multiple-choice/true-false midterm facilitated through the course website, and 2) one in-class short answer final exam. Each exam is worth 25% of your final grade.

*Group Project (20%)*: This assignment is designed to: (1) build your theoretical/empirical knowledge about a specific issue-area, (2) develop a plan of action for helping to better local and/or global communities (3) encourages critical thinking skills (4) demonstrate your ability to work well in collaborative group work, and (5) give you the opportunity to teach your peers.

During the first week of class, you will be divided into groups and assigned one of the following topic areas: 1) *The Uncrowned Monarch*, 2) *The Deep State*, 3) *Interests and Influence*, 4) *Politics of Identity in America*, 5) *Environmental Policy in the United States*, or 6) *Protect Life, Liberty, and Property*.

Note: *Your group is required to make at least two appointments with me, outside of regularly scheduled class time, to discuss the project.*

(see the appendices for further instructions and grading rubric)

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### ***Course Agenda***

I have designed this course to include a rigorous reading load—though on most occasions you will read around 30 pages per week. ***Most weeks have MANDATORY READING(s), while others have ELECTIVE READING(s), and OPTIONAL readings. Be sure to pay close attention to the syllabus!*** Readings often feature dense arguments and complicated research designs. While I do not expect you to fully understand all the technical details of statistical tests and the like, I would like you to grasp the arguments, basic research approach (i.e., the data they collected).

The readings for this course are drawn primarily from academic journal articles and scholarly book chapters, all of which I have made available on the course website. ***You need not purchase any texts for this course as I have provided you with a digital copy of every required reading.*** The assigned readings are on Canvas and are labeled to correspond with the appropriate week. I also encourage you to bring a physical or electronic copy of the readings to class so that we can closely interrogate them together as a class.

I urge you to read the material carefully, thoughtfully and with a critical eye. I have provided a series of questions for you to think about in advance of the weekly readings. The weekly quizzes will normally be a variant of one of these questions so I encourage you to think about them carefully and jot down some notes accordingly. See the list of readings and the accompanying questions in the pages to follow.

\*\*\*

### ***Course Schedule***

Note: *These dates are subject to change. Kindly keep track of these dates and any changes made to them.*

**Week 1 (January 14<sup>th</sup> – 20<sup>th</sup>) *Theory of American National Government***

**Week 2 (January 21<sup>st</sup> – 27<sup>th</sup>) *Federalism in America***

**Week 3 (January 28<sup>th</sup> – February 3<sup>rd</sup>) *How democratic is the Constitution, really?***

**Week 4 (February 4<sup>th</sup> – 10<sup>th</sup>) *Congress***

**Week 5 (February 11<sup>th</sup> – 17<sup>th</sup>) *The Uncrowned Monarch: the President of the United States***

**Week 6 (February 18<sup>th</sup> – 24<sup>th</sup>) *The Umpire: the Judiciary of the United States***

**Week 7 (February 25<sup>th</sup> – March 3<sup>rd</sup>) *The Deep State: the Bureaucracy of the United States***

**Week 8 (March 4<sup>th</sup> – 10<sup>th</sup>) *What does it mean to be an American?***

***Midterm Due on Canvas no later than 11:59pm on March 2<sup>nd</sup>, 2019***

**Week 9 SPRING BREAK!**

**Week 10 (March 18<sup>th</sup> – 24<sup>th</sup>) *Donkeys and Elephants***

Week 11 (March 25<sup>th</sup> – 31<sup>st</sup>) *Voting and Political Participation*

Week 12 (April 1<sup>st</sup> – 7<sup>th</sup>) *Interests and Influence*

Week 13 (April 8<sup>th</sup> – 14<sup>th</sup>) *Politics of Identity in America*

Week 14 (April 15<sup>th</sup> – 21<sup>st</sup>) *Incrementalism*

Week 15 (April 22<sup>nd</sup> – 28<sup>th</sup>) *Environmental Policy in the United States*

Week 16 (April 29<sup>th</sup> – May 5<sup>th</sup>) *Protect Life, Liberty, and Property...no matter the cost?*

*Final Exam to be held on the week of May 6<sup>th</sup>, 2019 (date TBD)*

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### *Weekly Agenda*

Week 1 (January 14<sup>th</sup> – 20<sup>th</sup>) *Theory of American National Government*

*“Reader, you have here the beginning and the end of a two-part treatise about government...” (John Locke)*

Locke, John (1689) *Second Treatise of Government*, in Jonathan Bennett ed., read Preface, Chapters 1, 2, 7, 8, 9, 12, 13, 18, and 19 (feel free to peruse more)

#### *Reading Questions*

- It is important to note John Locke heavily influenced *the Founders* when they drafted the *Declaration of Independence*, *The Federalist Papers* and subsequently, *the Framers* in the drafting of the *Constitution*. With this in mind, describe what Locke meant by the ‘State of Nature.’
- According to Locke (1689), are we inclined to form governments? Why?
- According to Locke (1689), who should have the most power: the government or the people? Why?
- Describe some circumstances under which a government should be dissolved. Who is responsible for dissolving a ‘tyrannous’ government?

*Total pages for Week 1: approximately 20*

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Week 2 (January 21<sup>st</sup> – 27<sup>th</sup>) *Federalism in America*

*“To the People...” (Alexander Hamilton, Federalist Paper No. 1)*

Madison, Hamilton, and Jay, *The Federalist Papers*, 10, 51, 47, 49, 58 (feel free to peruse additional papers) [http://avalon.law.yale.edu/subject\\_menus/fed.asp](http://avalon.law.yale.edu/subject_menus/fed.asp)

Connot, Mark J. and Jason J. Zummo (2016) “Everybody Wants to Rule the World: Federal vs. State Power to Regulate Drones,” *Air and Space Lawyer* 29(3)

*Reading Questions*

- According to the authors of *The Federalist Papers*, what were some key failures of the *Articles of Confederation*?
- In the wake of the American Revolution, *the Founders* revulsion towards monarchical government should come as no surprise (Britain was a monarchy, after all). Define ‘Federalism’ and explain its role in the American system of government.
- Briefly describe federal preemption (using drones).

*Total pages for Week 2: approximately 30*

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**Week 3 (January 28<sup>th</sup> – February 3<sup>rd</sup>) *How democratic is the Constitution, really?***

Dahl, Robert A. (2002) Chapters One, Two, and Six in, *How Democratic is the American Constitution?* Yale University Press

*Reading Questions*

- According to Robert Dahl (2002), what were (are) some of the blatantly undemocratic elements in the *Framer’s Constitution*?
- “Is political equality a realistic goal, [... and] is it really a desirable goal”—at least according to Dahl (2002, 123)? Can this even be practically achieved when using a decidedly less-than-democratic constitution?

*Total pages for Week 3: approximately 38*

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**Week 4 (February 4<sup>th</sup> – 10<sup>th</sup>) *Congress***

*“The American Republic will endure until the day Congress discovers that it can bribe the public with the public's money...” (Alexis de Tocqueville)*

Kromkowski, Charles and John Kromkowski (1991) “Why 435? A Question of Political Arithmetic,” *Polity* 24(1), 129-145

Vega, Arturo and Juanita Firestone (1995) “The Effects of Gender on Congressional Behavior and the Substantive Representation of Women,” *Legislative Studies Quarterly* 20(2), 213-222

*Reading Questions*

- What is ‘gerrymandering?’

- What do you think about the number of persons each member of Congress is responsible for representing? Is it too many, too few? Give some positive outcomes that might result from increasing/decreasing House size.
- Has the increased number of women in the Congress led to better representation of 'women's' issues? How would you categorize 'women's' issues?
- Describe some of Vega and Firestone's (1995) findings.

Total pages for Week 4: 45

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### **Week 5 (February 11<sup>th</sup> – 17<sup>th</sup>) *The Uncrowned Monarch: the President of the United States***

Mayer, Kenneth (1999) "Executive Orders and Presidential Power," *The Journal of Politics*, 61(2), 445-466

Druckman, J.N. and J.W. Holmes (2004) "Does Presidential Rhetoric Matter? Priming and Presidential Approval," *Political Science Quarterly* 34, 755-778

#### *Reading Questions*

- According to Mayer (1999), how do presidents use executive power? Liberally? Sparingly? How has its usage changed over time? Which party has wielded executive power more liberally? Does the president's popularity have anything to do with usage of executive powers?
- What is 'priming' and how does it differ from 'persuasion'?
- Briefly describe the results of Druckman and Holmes' (2004) experiment.

Total pages for Week 5: **approximately 40**

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### **Week 6 (February 18<sup>th</sup> – 24<sup>th</sup>) *The Umpire: the Judiciary of the United States***

Kirwan, Kent (1995) "The Use and Abuse of Power: The Supreme Court and Separation of Powers," *AAPSS* 537, 76-84

Cohen Bell, Lauren (2002) "Senatorial Discourtesy: The Senate's Use of Delay to Shape the Federal Judiciary," *Political Research Quarterly* 56, 589-609

#### *Reading Questions*

- Give a brief history of why *the Framers* wanted separation of powers. Which of the three branches, according to James Madison, should embody the most power? Which do you think has the most power? Explain your reasoning.
- Look over Article I, section 1 and Article I, section 7 of the *Constitution* (found here: <http://constitutionus.com/#index> Note: *click on the index to find the appropriate selections*). What is the 'bicameral' requirement? Why do you think the president was afforded veto power?

- What is one of the fundamental purposes of the Judiciary—at least according to Kirwan (1995)?
- Look over Article III of the *Constitution* (using the link above) and describe why the confirmation of federal judges is substantively different than the confirmation process for other high-level federal nominees.

Total pages for Week 6: **approximately 30**

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### **Week 7 (February 25<sup>th</sup> – March 3<sup>rd</sup>) *The Deep State: the Bureaucracy of the United States***

Article II, section 2, and Article I, section 8, of the *Constitution* (found here: <http://constitutionus.com/#index> Note: click on the index to find the appropriate selections).

Michaels, Jon D. (2017) “Trump and the Deep State: The Government Strikes Back,” *Foreign Affairs* 96(5) Copyright: 2017 Council on Foreign Relations, Inc.

#### *Reading Questions*

- Though the term ‘bureaucracy’ does not appear in the text of the *Constitution*, it is often referred to *indirectly*. Using the link from Week 8, look over Article II, section 2, and Article I, section 8. Can you identify references to a bureaucracy? Explain.
- Ideally, that is the purpose of the bureaucracy? Would it be in a president’s best interest to empower or undermine the bureaucracy? Explain.

Total pages for Week 7: **15**

### **Week 8 (March 4<sup>th</sup> – 10<sup>th</sup>) *What does it mean to be an American?***

***Midterm Due on Canvas no later than 11:59pm on March 2<sup>nd</sup>, 2019***

Huynh, Que-Lam, Thierry Devos and Hannah R. Altman (2015) “Boundaries of American Identity: Relations Between Ethnic Group Prototypicality and Policy Attitudes” *Political Psychology* 36 (4), 449-468

Then, Corey M. (2006) “Searches and Seizures of Americans Abroad: Re-examining the Fourth Amendment's Warrant Clause and the Foreign Intelligence Exception Five Years after United States v. Bin Laden ,” *Duke Law Journal* 55(5), 1059-1073

#### *Reading Questions*

- What are ‘hard boundaries?’ Are they easily manipulated and variable or impermeable and strict? Explain.
- According to Huynh et al. (2015), who are significantly more likely to perceive their own group as prototypically American? Explain.
- As a quick review, which amendment(s) discusses “[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall

- not be violated, and no Warrants shall issue, but upon probable cause...,” and how no one shall be “deprived of life, liberty or property without due process of law...?”
- Considering the above, are you afforded the same protections when abroad—at least according to *Then* (2006)? Explain. What do you make of this?

Total pages for Week 8: 34

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## WK9 SPRING BREAK

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### Week 10 (March 18<sup>th</sup> – 24<sup>th</sup>) *Donkeys and Elephants*

Hirsh, Jacob B.; Colin G. DeYoung; Xiaowen Xu, and Jordan B. Peterson (2010) “Compassionate Liberals and Polite Conservatives: Associations of Agreeableness With Political Ideology and Moral Values” *Personality and Social Psychology Bulletin* 36(5) 655–664

Buchanan, Sydney (2002) “From Conservative Republican to Liberal Democrat: A Political Journey,” *Houston Law Review* 39(2), 447-462

#### Reading Questions

- Describe (some) of the results from Hirsh et al. (2010). Do these results make sense to you?
- Do you think it is possible to ‘switch’ your political affiliation? Why did Sydney Buchanan switch?

Total pages for Week 10: 26

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### Week 11 (March 25<sup>th</sup> – 31<sup>st</sup>) *My vote can’t possibly make a difference: Voting and Political Participation*

Olson, Mancur (1965) *The Logic of Collective Action: Public Goods and the Theory of Groups*, Harvard University Press, 1-65

Schlozman, Kay; Sidney Verba, and Henry Brady (1995) “Participation is Not a Paradox: The View from American Activists,” *British Journal of Political Science* 25(1), 1-36

#### Reading Questions

- What does Olson (1965) have to say about collective action (think, *voting*)? Does it make sense to you?



- In response to Olson's (1965) work, Scholzman et al. (1995) took a new approach to explain political participation. What did they find? Now consider the two selections and give your assessment.

*Total pages for Week 11: approximately 40*

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## **Week 12 (April 1<sup>st</sup> – 7<sup>th</sup>) *Interests and Influence***

**Mandatory reading:** Hojnacki, Marie and David Kimball (1998) "Organized Interests and the Decision of Whom to Lobby in Congress," *American Political Science Review* 92, 775-790

**And choose ONE of the following to read...**

Eisinger, Robert et al. (2007) "What Media Bias? Conservative and Liberal Labeling in Major U.S. Newspapers," *Press/Politics* 12(1), 17-36

**OR**

Fridkin, Kim; Patrick J. Kenney and Amanda Wintersieck (2015) "Liar, Liar, Pants on Fire: How Fact-Checking Influences Citizens Reactions to Negative Advertising," *Political Communication* 32(1), 127-151

### *Reading Questions*

- Do major US newspapers disproportionately 'label' conservative politicians—at least according to Eisinger et al. (2007)?
- According to Fridkin et al. (2015, 137), "candidates, interest groups, and campaign consultants rely on negative advertising to promote negative views of their rivals." Was 'fact checking' a persuasive tool for swaying voter's views? Is it effective on you?
- Organized interest groups are often powerful enough to sway the political process in their favor. According to Hojnacki and Kimball (1998), 'lobbying' therefore has two purposes. Describe each. What is your opinion on lobbying?
- Choose and describe **two** of Hojnacki and Kimball's (1998) results.

*Total pages for Week 12: 50*

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## **Week 13 (April 8<sup>th</sup> – 14<sup>th</sup>) *Politics of Identity in America***

Smets, Kaat and Carolien van Ham (2013) "The Embarrassment of Riches? A Meta-analysis of Individual-level Research on Voter Turnout," *Electoral Studies* 32, 344-359

Dolan, Kathleen A. (2010) "The Impact of Gender Stereotyped Evaluations on Support for Women Candidates," *Political Behavior* 32, 69-88

*Reading Questions*

- Which factors are consistently linked to individual level turnout—at least according to Smets and von Ham (2013)? Explain.
- Describe the research design used by Smets and von Ham (2013). Does it seem rigorous to you? Explain.
- Explain the difference between women and men with regard to perceived policy ‘traits’—at least according to Dolan (2010)? What does this tell you about the perceived or expected roles of women and men in America?

*Total pages for Week 13: 34*

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**Week 14 (April 15<sup>th</sup> – 21<sup>st</sup>) *The Science of Muddling Through: Incrementalism***

Lindblom, Charles (1959) “The Science of Muddling Through,” *Public Administration Review* 19, 79-88

Schiller, Wendy (1995) “Senators as Political Entrepreneurs: Bill Sponsorship in the US Senate,” *American Journal of Political Science* 39(1), 186-203

*Reading Questions*

- Briefly explain the policymaking dilemma as described by Lindblom (1959).
- What is a ‘bill?’ Describe the three ‘costs’ of bill sponsorship—at least according to Schiller (1995).
- Choose **two** of the following and describe how they might influence which bills a senator might ultimately sponsor (seniority, staff, committee memberships, party).

*Total pages for Week 14: 37*

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**Week 15 (April 22<sup>nd</sup> – 28<sup>th</sup>) *Environmental Policy in the United States***

***“There’s so much pollution in the air now that if it weren’t for our lungs there’d be no place to put it all...” (Robert Orben)***

“Constitutional Considerations: State versus Federal Environmental Policy Implementation,” *Hearing before the Subcommittee on the Environment and the Economy of the Committee on Energy and Commerce, House of Representatives, 113<sup>th</sup> Congress, Second Session, July 11, 2014*: US Congress; Note: you need not read the entire 96-page document...though you should browse the first 20-30 pages.

Potoski, Matthew (2001) “Clean Air Federalism: Do States Race to the Bottom?” *Public Administration Review* 61(3), 335-342

*Reading Questions*

- Like the drone policy article from week 2, scholars and politicians often debate whether the state or federal government is better for environmental policy implementation. Describe some of the things from the 113<sup>th</sup> Congressional Subcommittee hearing that you found interesting. Which do you think makes more sense to you: state or federal environmental policy?
- Matthew Potoski's paper found some interesting results that run counter to the standard assumptions. Describe.
- Observe Table 2 on page 338 of Potoski (2001). Explain the results. Note: *significant variables are denoted with either a “\*” or a “\*\*”*.

Total pages for Week 15: **approximately 30**

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### **Week 16 (April 29<sup>th</sup> – May 5<sup>th</sup>) *Protect Life, Liberty, and Property...no matter the cost***

Hardin, Russel (2004) “Civil Liberties in the Era of Mass Terrorism,” *The Journal of Ethics* 8(1), 77-95

Atkins, Elizabeth (2014) “Spying on Americans: At What Point Does the NSA's Collection and Searching of Metadata Violate the Fourth Amendment?,” *Washington Journal of Law, Technologies, and Art* 10(1), 51-88

#### *Reading Questions*

- Do you think the threat of terrorism gives the US government *carte blanche* to side-step the *Constitution* in the name of ‘national security?’ If not, why? Is so, under what circumstances?
- According to the US Patriot Act of 2001 (which has since been replaced by the USA Freedom Act, 2015), what is/was the standard used to determine whether or not the government could ‘spy’ on a US citizen? Should the government be allowed to spy on Americans in the name of ‘national security?’ If not, why? Is so, under what circumstances?

Total pages for Week 16: **55**

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***Final Exam to be held on the week of May 6<sup>th</sup>, 2019 (date TBD)***

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#### ***Contacting Me***

I encourage you to contact me via email whenever a question arises. I am typically very quick to respond to email. **I also encourage you to utilize my office hours.** If you are unable to attend office hours, please contact me via email and we can arrange an appointment at another time.

### ***Contested Subject Matter***

“Empiricism addresses what is, what might be in the future, and why. It does not typically address whether or not the existence of something is good or bad...” (Johnson et al., 2015, 123). In studying politics scientifically, our goal, then, is to think about empirical issues in a way that is objective and “value free.” Still, we will encounter subject matter, which can evoke strong reactions. This is par for the course and I am fully committed to offering a safe and respectful space in which to explore any issues that should emerge. Please keep your comments informed and respectful.

### ***Disability Support Services***

Services for students with disabilities are provided through the Student Health Center’s Disability Support Services Office located in the Juan Chacon Building, Room 221. Some examples of the assistance provided are: audio materials for the blind or dyslexic, note takers, readers, campus guides, audio recorders, and a quiet testing area. In order to qualify for these services, documentation must be provided by certified health care professionals. Disability Support Services forms are available in the First Year Experience Office located in the Juan Chacon Building and in the Student Health Services Office in Muir Heights 111. The Disability Support Services Office serves as Western New Mexico University's liaison for students with disabilities. The Disability Support Services Office can be contacted by phone at (575) 538-6400 or e-mail at [dss@wnmu.edu](mailto:dss@wnmu.edu).

### ***Communication Policy Statement regarding official email***

WNMU’s policy requires that all official communication be sent via Mustang Express. As a result, all emails related to your enrollment at WNMU and class communication—including changes in assignments and grades—will be sent to your wnmw.edu email address. It is very important that you access your Mustang Express e-mail periodically to check for correspondence from the University. **If you receive most of your email at a different address you can forward your messages from Mustang Express to your other address.**

### ***WNMU Policy on Email Passwords***

WNMU requires that passwords for access to all of the protected software, programs, and applications will be robust, including complexity in the number of characters required, the combination of characters required, and the frequency in which passwords are required to be changed. Minimum complexity shall include:

- Passwords shall contain at least six (6) characters.
- Passwords shall contain at least one capital (upper case) letter, and at least one symbol (numbers and characters such as @ # \$ % & \*).
- Passwords shall be changed at least every 90 days. (8/6/08)

### ***Academic Integrity Policy and Procedures***

You shall observe standards of honesty and integrity in academic work as defined in the WNMU catalog. Violations of academic integrity include “any behavior that misrepresents or falsifies a student’s knowledge, skills or ability with the goal of unjustified or illegitimate evaluation or gain” (WNMU Faculty Handbook, 2008). Generally violations of the academic integrity include cheating and plagiarism. Refer to the catalog pages 60-61 for definitions.

Plagiarism: “the intentional or unintentional representation of another’s work as one’s own without proper acknowledgement of the original author or creator of the work” (WNMU Faculty Handbook, 2008).

Penalties for infractions of academic integrity in this class are as follows:

- **For the first violation, students caught plagiarizing will receive a zero (0) on the assignment.**
- **Students caught violating the WNMU plagiarism policy more than once may receive an “F” for the course.**

Cheating: “using or attempting to use unauthorized materials...and unauthorized collaboration with others, copying the work of another or any action that presents the work of others to misrepresent the student’s knowledge” (WNMU Faculty Handbook, 2008).

- **For the first violation, students caught cheating will receive a zero (0) on the assignment.**
- **Students caught violating the WNMU policy on cheating more than once may receive an “F” for the course.**

#### *Assessment/Evaluation and Grading Scale*

- 90-100            A
- 80-89.9           B
- 70-79.9           C
- 60-69.9           D
- 59.9 and below F

#### *Course Appendices*

- A. GROUP PROJECT DESCRIPTION (ASSESSMENT)
- B. GROUP PROJECT RUBRIC
- C. GROUP PROJECT BRAINSTORMING WORKSHEET
- D. GROUP PROJECT SELF AND PEER REVIEW EVALUATION FORM

## APPENDIX A. GROUP PROJECT DESCRIPTION (ASSESSMENT)

### *Task*

As a group, you will research, design, build, and present to the class a comprehensive and informative group presentation focusing on a specified issue-area or topic, and practice applying your learning by creatively addressing your topic of choice assigned the first week.

### *Purpose*

Producing a quality piece of intellectual work during your time at WNMU will develop your skills for work and wider citizen participation later down the road. The essential skill of teamwork and interpersonal experiences in diverse groups frequently depends on the equitable and meaningful participation with others. You are therefore expected to actively participate in this group project to that end.

### *Objective*

This assignment is designed to: (1) build your theoretical/empirical knowledge about a specific issue-area, (2) develop a plan of action for helping to better local and/or global communities (3) encourages critical thinking skills (4) demonstrate your ability to work well in collaborative group work, and (5) give you the opportunity to teach your peers.

### *Delivery Format*

Technology has greatly enhanced our capacity to disseminate important information to others in a meaningful, interesting, and (hopefully) engaging way. You are therefore permitted to employ one or any number of delivery formats for presenting your group project to the class. You may use PowerPoint, Prezi, ClearSlide, SlideDog, GoAnimate or most any other presentation software of your choosing.

Your group's presentation may also incorporate videos produced by others (CNN, History Channel, etc.) but the total running time of all videos included in your groups' presentation must not exceed 5 minutes in duration. From start to finish, your groups' presentation should be no less than 20 minutes in duration (and no longer than 40 minutes).

### *Possible Approaches*

Below are two possible approaches for your project.

**(1) Exploratory Case Study:** Choose **one** example in your groups' issue area on which to focus and delve deeply into the literature vis-à-vis in-depth qualitative analyses of within-case evidence. In *Social Science Methodology: A Unified Framework* (2011), John Gerring described the exploratory case study as a: "time-honored approach ... enabling one to gain more in-depth knowledge of one or a few cases that are thought to exemplify key features of a topic."

**(2) Theory-Based Analysis:** Here you will discuss the theoretical underpinnings of your groups'

issue area more broadly. Developing a sound understanding of the theory beneath a specific topic is normally the first step in any scholarly inquiry. In *Social Science Concepts: A User's Guide* (2006), Gary Goertz wrote: "We must first think clearly about the substance and structure of our concepts [theory] and then we can begin to think about how to validly operationalize that theory into a quantitative measure." As such, your group should discuss the broad theories resting at the core of your issue area (e.g., what are some of the causal variables or causal paths).

### *Bringing it Together*

Once members have completed their respective assignment, as a group, you should aggregate it all into **one cohesive presentation**. It is also probably a good idea to practice your presentation as a group before you present to the class.

### *Getting Started*

Groups work best if people **know each others' names** and a bit of their background and experience, especially those parts that are related to the task at hand. Take time to introduce yourselves.

- Be sure to **include everyone** when considering ideas about how to proceed as a group. Some may never have participated in a small group in an academic setting. Others may have ideas about what works well. Allow time for people to express their inexperience and hesitations as well as their experience with group projects.
- Most groups **select a leader** early on, especially if the work is a long-term project. Other options for leadership in long-term projects include taking turns for different works or different phases of the work.
- Everyone needs to **discuss and clarify the goals** of the group's work. Go around the group and hear everyone's ideas (before discussing them) or encourage divergent thinking by brainstorming. If you miss this step, trouble may develop part way through the project. Even though time is scarce and you have a (marginally) big project ahead of you, groups may take some time to settle in to work.

### *Some Benefits of Working in Groups*

- Students who have difficulty talking in class may speak in a small group
- More students, overall, have a chance to participate
- Talking in groups can help overcome the anonymity and passivity of a large class or a class meeting in a poorly designed room
- Students who expect to participate actively prepare better for class

## APPENDIX B. GROUP PROJECT RUBRIC

Six criteria for evaluation:

### 1. Social Issue Identification

This dimension focuses on identifying, concentrating on and thoroughly exploring the and significant issues, aspects, or relationships of your topic of choice for effective analysis.

### 2. Context and Assumptions

This dimension focuses on the context, scope and assumptions connected to the issue, considering other relevant contexts, background information, and the challenges regarding complexity and bias. Work demonstrates understanding of social, political, and ethical implications.

### 3. Sources and Evidence

This dimension focuses on search, selection and source evaluation skills – including accuracy, relevance, and completeness. High score effectively analyze and integrate multiple appropriate pieces of evidence, acknowledge biases, and distinguish correlations from casual relationships.

### 4. Civic Engagement

This dimension focuses on integrating previous dimensions and identifying conclusions. Provides proposal for future action and potential outcomes towards socially responsible citizenship.

### 5. Communication

This dimension focuses on communicating previous dimensions in a visual and oral presentation. May include effective media, activities, interactions, style, and language.

0 – Absent

1 – Minimal

2 - Emerging

3 - Developing

4 - Competent

5 – Effective

6 – Mastering

### Instructions: For the six criteria below:

- Circle specific phases which describe the work and include written comments
- Circle a numeric score for each criterion (or indicate a half point increment)



1. Identifies and focuses (and appropriately formulates) the issue, problem, questions.

DESCRIPTION	Mastering	Effective	Competent	Developing	Emerging	Minimal	Absent
This dimension focuses on identifying, concentrating on and thoroughly exploring a political issue, aspects, or relationships for effective analysis.	6	5	4	3	2	1	0
	Identifies, focuses and thoroughly explores the issue and significant underlying issues, aspects, or relationships. Captures the multi-faceted and dynamic nature, scope and elements of complex issue.		Some details or nuances are missing or vague. Minor aspects may be inaccurate, confused or extraneous. Partially identifies related subsidiary issue.		Attempts with limited success to identify and summarize the issue; or does so superficially, incompletely, or in accurately. Scope may be overly narrow or broad.		
	Comments:						

2. Identifies and considers the influence of context and assumptions, including biases.

DESCRIPTION	Mastering	Effective	Competent	Developing	Emerging	Minimal	Absent
This dimension focuses on the context, scope and assumptions connected to the issue, considering other relevant contexts, background information, and the challenges regarding complexity and bias. Work demonstrates understanding of social, political, and ethical implications. May include group, national, ethnic, cross-cultural or values, impact on society, citizenry and democracy, equity, quality of life or organizational or government, trade, labor, business, power relations or ability to meet long term future needs, changes, resource allocation, global implications.	6	5	4	3	2	1	0
	Analyzes the issue with a clear sense of scope and multiple contexts. Considers significant contexts and background information.		Presents and explores relevant contexts regarding the issue. Considers and develops at least one aspect of context; some other aspects are marginally developed.		Begins to consider context, or does so with partial success. Overall, little development of context. Approach to the issue may be overly based on opinion and belief.		
	Contextualizes multiple biases and values, giving each full weight and consideration, but may elect to choose one vantage point while acknowledging the complexity of the issue.		Analysis primarily relies on established sources. Acknowledges personal biases; may have some difficulty accepting other vantage points as legitimate.		Most analysis is grounded in absolutes.		
	Identifies influence of context and questions assumptions, addressing ethical dimensions underlying the issue. Demonstrates understanding of social, political, and ethical implications.		Provides some recognition of context and consideration of own assumptions and/or that underlie the issue, and of the implications of those assumptions.		Shows some basic awareness of own assumptions and/or assumptions that underlie the issue; may remain superficial.		
	Comments:						

3. Presents, assesses, and analyzes appropriate supporting data/evidence/sources.

DESCRIPTION	Mastering	Effective	Competent	Developing	Emerging	Minimal	Absent
This dimension focuses on search, selection and source evaluation skills – including accuracy, relevance, and completeness. High score effectively analyze and integrate multiple appropriate pieces of evidence, acknowledge biases, and distinguish correlations from casual relationships.	6	5	4	3	2	1	0
	Evidence of search, selection and source evaluation skills demonstrates notable identification of unique and salient resources.		Search and selection suggest sources were evaluated to meet the information need.		Most data/evidence or sources are simplistic, or inappropriate, or not related to topic.		
	Information need is clearly defined and integrated to meet and exceed assignment.		Appropriate evidence or sources provided. Use of evidence, qualified selective, and appropriate.		Makes limited distinction among fact, opinion, and value judgments.		
	Examines evidence and its source; addresses relevance and completeness.		Considers knowledge as relative collection of opinions and perspectives, and makes a little attempt to compare.		Conflates cause and correlation; relationship between evidence and analysis may be unclear.		
	Demonstrates understanding of facts shape but may not confirm opinion.		Discerns fact from opinion and may recognize some bias in evidence, although may be limited.				
	Comments:						

4. Develops and presents a type of civic action to address the identified issue/problem.

DESCRIPTION	Mastering	Effective	Competent	Developing	Emerging	Minimal	Absent
This dimension focuses on integrating previous dimensions and identifying conclusions. Provides proposal for future action and potential outcomes towards socially-responsible politically-engaged citizenship.	6	5	4	3	2	1	0
	Demonstrates ownership for constructing knowledge or framing integrating objective prescription as a socially-responsible politically engaged citizen.		Includes some original thinking that describes objective prescription as socially-responsible politically engaged citizen.		Is unclear, simplistic, or includes little original thinking of objective prescription as a socially-responsible politically engaged citizen.		
	Clearly presents and justifies plan for idea in action while qualifying or integrating contrary views or interpretations. May draw support from experience and information not available from assigned sources.		Presents and justifies steps for idea in action, although gaps may exist.		Is minimally identified and/or too few steps or details. May not clarify the established idea.		
			Main remain within “safe” or predictable parameters.		Little or no risk-taking, lacks exploration.		
	May explore ideas that stretch conventional		Some evidence of reflection and/or thought.		Little evidence of reflection or thought.		

	parameters; includes innovative thinking, questioning or risk-taking.  Evidence of significant reflection and thought.			
	Comments:			

5. Communicates effectively in one or more modes (May include posters, oral presentations, websites, demonstrations, presentation software, artwork, film, etc.)

DESCRIPTION	Mastering	Effective	Competent	Developing	Emerging	Minimal	Absent
This dimension focuses on communicating previous dimensions in a visual and oral presentation. May include effective media, activities, interactions, style, and language.	6	5	4	3	2	1	0
	Use communication choices to effectively: Convey identified purpose and create desired affect (visual impact and credibility) for intended audience(s).		Choose basic elements of delivery, media, activities, tone and style to engage audience; most elements all though not all positively contribute.		Some choice of delivery, media, activities, tone and style do not fit the audience or purpose; basic choices may seem haphazard or ineffective.		
	Well-prepared organization of information, ideas, and activities effectively.		Adequately organizes information, ideas, and activities.		Lacks clear organization of information, ideas, or activities; or is inconsistent.		
	Choose effective delivery method: presentation software, media, activates, and tone and style to engage the audience; all elements used for impact and contribution.		Choose appropriate delivery method: presentation software, media, activates, and tone and style to engage the audience; mostly successful elements used for impact and contribution.		Use language which obscures some ideas, some use of standards and formatting seems unsuitable. Errors distracting.		
	Uses language which clearly communicates ideas; makes effective use of standards and formatting. Few errors.		Uses language which communicates ideas; appropriately employs standards, and formatting. Occasional errors but do not generally distract.				
	Comments:						

APPENDIX C. GROUP PROJECT BRAINSTORMING WORKSHEET

## Project Question

*Make sure your question is as detailed as possible.*

*What are some interesting angles to approach this question? List at least 4*

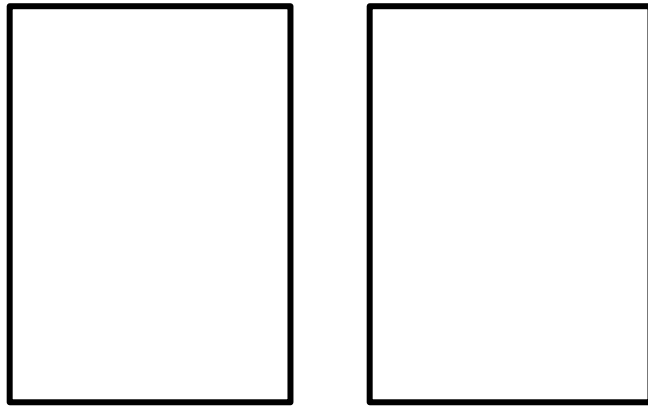
**getting started**

*Think about all of the facets of the problem and what information or observations you would need to adequately address*

*There are 6 components to address for this project.*

**divvy up the work**

- *Historical overview*
- *Responsibilities or policies*
- *Relevant institutions*
- *Success and failures*
- *Funding & Statistics*
- *Current news*



***Exercise 2:** Present your work. There are multiple ways to present your group project—from standard PowerPoint slides, Prezi, to Pecha Kucha. You can also develop a group work component for the class or prepare a Kahoot! survey. You could also conduct interviews with WNMU students, family, and/or friends by either asking survey questions or short videos (you need to get written permission from subjects if you intend to take video).*

**Presentation Ideas**

A large empty rectangular box with a black border, occupying the lower half of the page. It is intended for students to write their presentation ideas.

## Appendix A

### Ohm's Law

Design and conduct an experiment to test the validity of Ohm's Law. Use multimeters, not the displays on the power supply, for your measurements. The teacher will show you how to use multimeters to measure voltage, current, and resistance.

A good experiment can be done with one power supply, two multimeters, some connecting wires, and two or more resistors used one at a time. In this experiment, do not use the power supply at more than 5.0 volts. Use resistors between 100  $\Omega$  and 5 k $\Omega$ . Do not combine resistors in one circuit. Think about what would be a reasonable number of measurements to make with each resistor.

Each person should turn in a typed or neatly written report containing the four main components of a scientific experiment.

- 1) Hypothesis: The hypothesis should state the goal or idea or prediction of the experiment. Mathematical aspects of the hypothesis should be in mathematical form rather than words. Variables should be defined.
- 2) Procedure: The procedure section should describe exactly what was done so that another person could do the same thing. It should include diagrams. There is no need to include obvious instructions such as "obtain" or "gather" materials.
- 3) Results and analysis: The analysis section should include tables of the data that was collected and all of the calculations.
- 4) Conclusion: The conclusion should state whether the experiment supported the hypothesis or not. Your percent error or percent difference should be discussed. Sources of error (factors outside your control) should also be discussed. Finally, this section should mention any possible improvements to your experiment.

The lab will be graded according to the rubric on the back, so make sure you understand the rubric.

Category	4	3	2	1
Experimental Hypothesis	Hypothesized relationship between the variables is clear and reasonable and is based on what has been studied	Hypothesized relationship has minor flaws in logic or is not clearly expressed, or is not completely based on what has been studied.	Hypothesized relationship is based on flawed logic or is very unclear	No hypothesis is stated
Variables (divide score by 2)	All variables are clearly defined with all relevant details.	All variables are clearly defined with most relevant details, or one variable is missing.	Most variables are clearly defined with most relevant details.	Variables are not defined or the majority lack sufficient detail.
Experimental Design	Experiment is feasible with available equipment and results will support or refute the hypothesis.	Experimental design is adequate to test the hypothesis but leaves some unanswered questions or has practical problems.	Experimental design is relevant to the hypothesis but does not test it completely or is very impractical.	Experimental design is not relevant to the hypothesis or is infeasible.
Replicability	Steps are outlined sequentially and are adequately detailed so that other experimenters can replicate them.	Steps are outlined but are hard to follow, or some details are missing.	Steps are outlined, but there is not enough detail to replicate the procedures, or some steps are missing.	Several steps are not outlined and there is not enough detail to replicate the procedures.
Data	The data are presented accurately, clearly, and informatively in tables and/or graphs. Any calculations are correct and easy to follow.	The data are presented accurately in tables and/or graphs and calculations are correct, but there is some lack of clarity in presentation of data and analysis.	The data are presented accurately and calculations are correct, but presentation is very unclear, possibly because of lack of tables and graphs.	Data and calculations are not shown or are inaccurate.
Conclusion	Conclusion includes whether the findings supported the hypothesis, major sources of error, and possible improvements.	Conclusion has two of the three elements needed or is somewhat unclear or poorly reasoned.	Conclusion has one of the three elements or is very unclear or poorly reasoned.	All three elements are missing or nearly so.

## Appendix B

### ELECTROMAGNETIC INDUCTION

#### Transformers

##### Introduction

The primary and secondary coils used in this experiment will demonstrate the principle of electromagnetic induction, or the induction of voltage by a change in a magnetic field. The primary and secondary coils consist of two coils and a core that are separable from each other. The “primary coil” means the one that is connected to the power supply. The outer coil has about 12.4 times as many turns as the inner one, but the manufacturer’s documentation says the ratio should be treated as 10:1. The set is designed to work best at low voltages.

##### Equipment

Primary and Secondary Coils

Connecting Wires

Galvanometer

AC/DC Power Supply

Multimeters

##### Procedure

- 1) Insert the inner coil into the outer coil. Connect the inner coil to a DC power supply and the outer coil to a galvanometer. Insert the metal cylinder into the inner coil. Set the dial on the power supply to some convenient spot that doesn’t make the power supply buzz. While depressing the left button on the galvanometer, so that the galvanometer becomes a sensitive ammeter (measuring the voltage across it divided by its resistance), turn the power supply switch on. Turn the switch off. (If your power supply doesn’t have an on-off switch, turn the power up quickly, then down quickly.) What happened? Why did this happen? Just explain qualitatively—the readings on the galvanometer are far from being numerically precise enough for an experiment like this. Explain changes in the direction the needle moved but not the directions themselves.
- 2) Now reverse the set-up so that the inner coil is connected to the galvanometer and the outer coil is connected to the power supply. Again turn the power supply switch on and then off while depressing the left button on the galvanometer. Try to use the same maximum voltage you used in step 1. What happened and how did it compare to what happened in step 1)? Why was there a difference? Explain differences in magnitude, not direction.
- 3) This set-up is a transformer. Formulate a hypothesis about its behavior when AC is supplied to it. Define your variables clearly, including the units they’re measured in and the instrument you’ll use to measure each.
- 4) Design and carry out an experiment to test your hypothesis. The transformer works better with the metal core in it. Do not use voltages above 16 V. Although the coils seem like short circuits, they have enough resistance so there’s no need for a resistor in series with them to limit the current.
- 5) Describe your experiment so that someone else could replicate it.
- 6) Present the results clearly, using tables or graphs as necessary.



7) Discuss whether your results supported your hypothesis and what improvements are possible. Steps 3–7 will be graded by the rubric used for the Ohm's Law lab.

## **Generators**

### **Introduction**

Generators and motors are similar devices with input and output reversed. Both involve wire loops in a magnetic field. In a generator, the wire loops are rotated through a magnetic field. The wire loop provides a conducting path for the charges as they are deflected at right angles by the magnetic field.

### **Equipment**

Genecon Generators (2)

Banana Plugs or Connecting Wires

Resistor ( $10\ \Omega$ )

Multimeter

Stopwatch

### **Procedure**

1) Study the inner construction of a Genecon generator. Note that it consists of a small dc motor whose armature shaft is connected to the hand crank via gears. Connect the leads of one Genecon to the leads of a second Genecon. Have one person hold the first Genecon while another person turns the crank on the second Genecon. What happens to the first Genecon when the crank on the second Genecon is turned: a) clockwise? b) counterclockwise? c) fast (but not as fast as you can)? d) slow? e) with the leads reversed. Explain why these things happen. (Explain changes in direction, not directions themselves.)

3) Connect the Genecon to the  $10\ \Omega$  resistor. Connect the galvanometer or a multimeter in parallel across the resistor. Turn the crank on the Genecon at a steady speed in order to generate exactly (or as close as you can get) one volt. While one person is steadily cranking, have a second person time how long it takes to complete 10 or 15 full cranks (revolutions). Calculate the angular velocity of the cranking in revolutions per minute. Repeat for two volts and for three volts.

4) Graph angular velocity vs. voltage. Is the angular velocity directly proportional to the output voltage? Theoretically, should it be? Why?

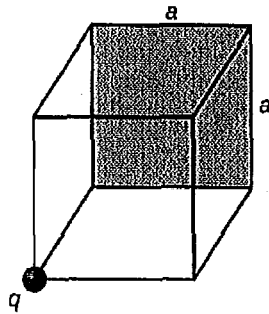
Extra credit: If you had measured angular velocity as a function of resistance, you'd find that it was approximately inversely proportional. Can you explain this?



inside a cube of side 2 cm. Find the net electric flux through the surfaces of the cube.

34. A net flux of  $1.0 \times 10^4 \text{ N} \cdot \text{m}^2/\text{C}$  passes inward through the surface of a sphere of radius 5 cm. (a) How much charge is inside the sphere? (b) How precisely can we determine the location of the charge from this information?

35. A charge  $q$  is placed at one of the corners of a cube of side  $a$ , as shown below. Find the magnitude of the electric flux through the shaded face due to  $q$ . Assume  $q > 0$ .



36. The electric flux through a cubical box 8.0 cm on a side is  $1.2 \times 10^3 \text{ N} \cdot \text{m}^2/\text{C}$ . What is the total charge enclosed by the box?

37. The electric flux through a spherical surface is  $4.0 \times 10^4 \text{ N} \cdot \text{m}^2/\text{C}$ . What is the net charge enclosed by the surface?

38. A cube whose sides are of length  $d$  is placed in a uniform electric field of magnitude  $E = 4.0 \times 10^3 \text{ N/C}$  so that the field is perpendicular to two opposite faces of the cube. What is the net flux through the cube?

39. Repeat the previous problem, assuming that the electric field is directed along a body diagonal of the cube.

40. A total charge  $5.0 \times 10^{-6} \text{ C}$  is distributed uniformly throughout a cubical volume whose edges are 8.0 cm long. (a) What is the charge density in the cube? (b) What is the electric flux through a cube with 12.0-cm edges that is concentric with the charge distribution? (c) Do the same calculation for cubes whose edges are 10.0 cm long and 5.0 cm long. (d) What is the electric flux through a spherical surface of radius 3.0 cm that is also concentric with the charge distribution?

### 6.3 Applying Gauss's Law

41. Recall that in the example of a uniform charged sphere,  $\rho_0 = Q/(\frac{4}{3}\pi R^3)$ . Rewrite the answers in terms of

the total charge  $Q$  on the sphere.

42. Suppose that the charge density of the spherical charge distribution shown in Figure 6.23 is  $\rho(r) = \rho_0 r/R$  for  $r \leq R$  and zero for  $r > R$ . Obtain expressions for the electric field both inside and outside the distribution.

43. A very long, thin wire has a uniform linear charge density of  $50 \mu\text{C/m}$ . What is the electric field at a distance 2.0 cm from the wire?

44. A charge of  $-30 \mu\text{C}$  is distributed uniformly throughout a spherical volume of radius 10.0 cm. Determine the electric field due to this charge at a distance of (a) 2.0 cm, (b) 5.0 cm, and (c) 20.0 cm from the center of the sphere.

45. Repeat your calculations for the preceding problem, given that the charge is distributed uniformly over the surface of a spherical conductor of radius 10.0 cm.

46. A total charge  $Q$  is distributed uniformly throughout a spherical shell of inner and outer radii  $r_1$  and  $r_2$ , respectively. Show that the electric field due to the charge is

$$\vec{E} = \vec{0} \quad (r \leq r_1);$$

$$\vec{E} = \frac{Q}{4\pi\epsilon_0 r^2} \left( \frac{r^3 - r_1^3}{r_2^3 - r_1^3} \right) \hat{r} \quad (r_1 \leq r \leq r_2);$$

$$\vec{E} = \frac{Q}{4\pi\epsilon_0 r^2} \hat{r} \quad (r \geq r_2).$$

47. When a charge is placed on a metal sphere, it ends up in equilibrium at the outer surface. Use this information to determine the electric field of  $+3.0 \mu\text{C}$  charge put on a 5.0-cm aluminum spherical ball at the following two points in space: (a) a point 1.0 cm from the center of the ball (an inside point) and (b) a point 10 cm from the center of the ball (an outside point).

48. A large sheet of charge has a uniform charge density of  $10 \mu\text{C/m}^2$ . What is the electric field due to this charge at a point just above the surface of the sheet?

49. Determine if approximate cylindrical symmetry holds for the following situations. State why or why not. (a) A 300-cm long copper rod of radius 1 cm is charged with  $+500 \text{ nC}$  of charge and we seek electric field at a point 5 cm from the center of the rod. (b) A 10-cm long copper rod of radius 1 cm is charged with  $+500 \text{ nC}$  of charge and we seek electric field at a point 5 cm from the center of the rod. (c) A 150-cm wooden rod is glued to a 150-cm plastic rod



## Appendix D

### Calculus-based Physics II Final Exam

Some parts of some problems depend on answers to earlier parts. If you can't do an early part, you can answer later parts in terms of the missing quantity. For instance, you could get full credit for an answer like " $y/(7.3\text{ s})$ , where  $y$  was the answer to the previous part".

Episode 1. Jerry sticks Tom's tail in an electrical socket ( $V_{rms} = 115\text{ V}$  at  $60\text{ Hz}$ ). Initially, we can think of Tom's tail as a single  $22\text{ k}\Omega$  resistor connected to the floor by his legs. His hind legs are  $65\text{ k}\Omega$  resistors and his front legs are  $55\text{ k}\Omega$  resistors. (His body has no resistance, and the floor is connected to a ground wire in the socket, which completes the circuit with no additional resistance.)

[This part will have a drawing]

- a) How much power is dissipated in Tom, on average?
- b) Now Tom jumps in the air as a result of the shock. This makes him equivalent to a parallel-plate capacitor with an area of  $40.0\text{ cm}^2$  (the total area of his paws) and a spacing of  $6.0\text{ cm}$ . What is his capacitance?
- c) This capacitance can be thought of as in series with the total resistance you determined in part a). Now how much current (rms) goes through Tom, and what is the phase shift of this current with respect to the emf?
- d) Tom is already planning to use a solenoid in self-defense as in Episode 3. What should its inductance be so that the combination of the solenoid with his capacitance gives a resonant frequency of  $60.0\text{ Hz}$ ? Ignore the resistance of the circuit.

Episode 2: Tom uses his owner's motorcycle to chase Jerry (with an ax). The motorcycle has a  $95\text{ hp}$  engine, that is, the rate it does work at is  $95\text{ hp}$ . It has an efficiency of  $23\%$ .

- a) How much energy (in the form of heat from burning gasoline) enters the engine every second?
- b) Assume that engine has half the efficiency of a Carnot engine running between the same high and low temperatures. If the low temperature is  $360\text{ K}$ , what is the high temperature?
- c) Assume the temperature of the inside of the engine is  $360\text{ K}$ . One part of the engine is a steel rectangle,  $0.0400\text{ m}$  by  $0.0500\text{ m}$  and  $0.0200\text{ m}$  thick. Heat flows from that temperature through the thickness of the steel to a temperature of  $295\text{ K}$ . What is the rate of heat flow?

Episode 3: Spike attacks Tom, who defends himself with a solenoid with 2400 turns, 0.500 m in length and 0.0500 m in radius, which creates a magnetic field at its center of 0.570 T.

a) How strong is the current in the solenoid?

b) A cosmic-ray muon ( $q = -1.60 \cdot 10^{-19} \text{ C}$ ) passes through the solenoid, perpendicular to its axis, at a speed of  $8.60 \cdot 10^6 \text{ m/s}$ . How strong is the force on it due to the solenoid's magnetic field?

c) The magnetic field in Spike's collar points toward Spike. The collar's area is  $3.00 \cdot 10^{-2} \text{ m}^2$ . As Spike runs toward Tom, the magnetic field in Spike's collar increases. The emf induced is  $1.70 \cdot 10^2 \text{ V}$ . Find the rate of change of the field and the direction of the emf in Spike's collar from Tom's point of view. Briefly state all the steps of your reasoning for the direction.

[This part will have a drawing.]

d) For the thrilling conclusion, Tom puts a  $130 \mu\text{C}$  charge at the origin and a  $-150 \mu\text{C}$  charge at the point (0.300 m, 0.400 m). He challenges Jerry to calculate the electric field at the point (0 m, 0.400 m). What is the correct answer?

Extra Credit: The magnetic field in Spike's collar points to the east, and the muon goes through it vertically downward. What is the direction of the force on the proton? Explain briefly.

$1 \text{ hp} = 746 \text{ W}$        $\epsilon_0 = 8.85 \cdot 10^{-12} \text{ C}^2/\text{N}\cdot\text{m}^2$   
For  $k_{\text{steel}}$  use  $17.0 \text{ W/m}\cdot\text{K}$

$\mu_0 = 4\pi \cdot 10^{-7} \text{ T}\cdot\text{m/A}$ .

## Appendix E

### Sample Quantitative Reasoning question

Is the given answer correct? If not, what are the errors?

Q: In a circuit with a 12 V source in series with a  $30\ \Omega$  light bulb and a  $10\ \Omega$  light bulb, which light bulb shines brighter? Assume these are incandescent bulbs, which behave as resistors, and that the bulb drawing more power is brighter. [This will be accompanied with a diagram.]

A: Bulb 1, because it has lower resistance and thus draws more current and more power.

The answer is that the response is incorrect because circuit elements in series all have the same current through them. Thus we can use  $P = I^2R$  and the power is proportional to  $R$ , so bulb 2 draws more power.





5780 K and that its emissivity is 1, find its radius.

## CHALLENGE PROBLEMS

123. A pendulum is made of a rod of length  $L$  and negligible mass, but capable of thermal expansion, and a weight of negligible size. (a) Show that when the temperature increases by  $dT$ , the period of the pendulum increases by a fraction  $\alpha dT/2$ . (b) A clock controlled by a brass pendulum keeps time correctly at  $10^\circ\text{C}$ . If the room temperature is  $30^\circ\text{C}$ , does the clock run faster or slower? What is its error in seconds per day?

124. At temperatures of a few hundred kelvins the specific heat capacity of copper approximately follows the empirical formula  $c = \alpha + \beta T + \delta T^{-2}$ , where  $\alpha = 349 \text{ J/kg} \cdot \text{K}$ ,  $\beta = 0.107 \text{ J/kg} \cdot \text{K}^2$ , and  $\delta = 4.58 \times 10^5 \text{ J} \cdot \text{kg} \cdot \text{K}$ . How much heat is needed to raise the temperature of a 2.00-kg piece of copper from  $20^\circ\text{C}$  to  $250^\circ\text{C}$ ?

125. In a calorimeter of negligible heat capacity, 200 g of steam at  $150^\circ\text{C}$  and 100 g of ice at  $-40^\circ\text{C}$  are mixed. The pressure is maintained at 1 atm. What is the final temperature, and how much steam, ice, and water are present?

126. An astronaut performing an extra-vehicular activity (space walk) shaded from the Sun is wearing a spacesuit that can be approximated as perfectly white ( $e = 0$ ) except for a  $5 \text{ cm} \times 8 \text{ cm}$  patch in the form of the astronaut's national flag. The patch has emissivity 0.300. The spacesuit under the patch is 0.500 cm thick, with a thermal conductivity  $k = 0.0600 \text{ W/m} \cdot \text{K}$ , and its inner surface is at a temperature of  $20.0^\circ\text{C}$ . What is the temperature of the patch, and what is the rate of heat loss through it? Assume the patch is so thin that its outer surface is at the same temperature as the outer surface of the spacesuit under it. Also assume the temperature of outer space is 0 K. You will get an equation that is very hard to solve in closed form, so you can solve it numerically with a graphing calculator, with software, or even by trial and error with a calculator.

127. The goal in this problem is to find the growth of an ice layer as a function of time. Call the thickness of the ice layer  $L$ . (a) Derive an equation for  $dL/dt$  in terms of  $L$ , the temperature  $T$  above the ice, and the properties of ice (which you can leave in symbolic form instead of substituting the numbers). (b) Solve this differential equation assuming that at  $t = 0$ , you have  $L = 0$ . If you have studied differential equations, you will know a technique for solving equations of this type: manipulate the

equation to get  $dL/dt$  multiplied by a (very simple) function of  $L$  on one side, and integrate both sides with respect to time. Alternatively, you may be able to use your knowledge of the derivatives of various functions to guess the solution, which has a simple dependence on  $t$ . (c) Will the water eventually freeze to the bottom of the flask?

128. As the very first rudiment of climatology, estimate the temperature of Earth. Assume it is a perfect sphere and its temperature is uniform. Ignore the greenhouse effect. Thermal radiation from the Sun has an intensity (the "solar constant"  $S$ ) of about  $1370 \text{ W/m}^2$  at the radius of Earth's orbit. (a) Assuming the Sun's rays are parallel, what area must  $S$  be multiplied by to get the total radiation intercepted by Earth? It will be easiest to answer in terms of Earth's radius,  $R$ . (b) Assume that Earth reflects about 30% of the solar energy it intercepts. In other words, Earth has an albedo with a value of  $A = 0.3$ . In terms of  $S$ ,  $A$ , and  $R$ , what is the rate at which Earth absorbs energy from the Sun? (c) Find the temperature at which Earth radiates energy at the same rate. Assume that at the infrared wavelengths where it radiates, the emissivity  $e$  is 1. Does your result show that the greenhouse effect is important? (d) How does your answer depend on the the area of Earth?

129. Let's stop ignoring the greenhouse effect and incorporate it into the previous problem in a very rough way. Assume the atmosphere is a single layer, a spherical shell around Earth, with an emissivity  $e = 0.77$  (chosen simply to give the right answer) at infrared wavelengths emitted by Earth and by the atmosphere. However, the atmosphere is transparent to the Sun's radiation (that is, assume the radiation is at visible wavelengths with no infrared), so the Sun's radiation reaches the surface. The greenhouse effect comes from the difference between the atmosphere's transmission of visible light and its rather strong absorption of infrared. Note that the atmosphere's radius is not significantly different from Earth's, but since the atmosphere is a layer above Earth, it emits radiation both upward and downward, so it has twice Earth's area. There are three radiative energy transfers in this problem: solar radiation absorbed by Earth's surface; infrared radiation from the surface, which is absorbed by the atmosphere according to its emissivity; and infrared radiation from the atmosphere, half of which is absorbed by Earth and half of which goes out into space. Apply the method of the previous problem to get an equation for Earth's surface and one for the atmosphere, and solve them for the two unknown temperatures, surface and atmosphere.

- a. In terms of Earth's radius, the constant  $\sigma$ , and the unknown temperature  $T_s$  of the surface, what is the power of the infrared radiation from the surface?
- b. What is the power of Earth's radiation absorbed by the atmosphere?
- c. In terms of the unknown temperature  $T_e$  of the atmosphere, what is the power radiated from the atmosphere?
- d. Write an equation that says the power of the radiation the atmosphere absorbs from Earth equals the power of the radiation it emits.
- e. Half of the power radiated by the atmosphere hits Earth. Write an equation that says that the power Earth absorbs from the atmosphere and the Sun equals the power that it emits.
- f. Solve your two equations for the unknown temperature of Earth.

For steps that make this model less crude, see for example the lectures (<https://openstaxcollege.org//21paulgormlec>) by Paul O'Gorman.

## Appendix B

### Electrostatics

#### Equipment

Balloon  
Styrofoam Cup and Plate  
Masking Tape  
Fur  
Styrofoam Peanuts  
Aluminum Pie Plate  
Scotch Tape  
Rubber Rod  
Electroscope  
Pith Balls (small, attached to a thread)  
String

#### Notes

This experiment investigates the idea of static electricity, that is, the separation of charges. Each step outlines what is to be done and also asks a question. Answer "What happens?" questions by describing what you observed. Answer "Why?" questions by explaining the motion or distribution of the charges. Assume everything is neutral at the beginning of the lab.

#### Procedure

- 1) Blow up a balloon. Rub it against the fur. How many Styrofoam peanuts can you pick up with the charged balloon? (The number does not affect your grade.) Sketch how the charges would have to be arranged on a balloon and a peanut in order for the peanut to be picked up.
- 2) Again rub the balloon against the fur. Can you cause the balloon to stick to the wall? a door? the chalkboard? a faucet? Try sticking it to other places. In general, where should the balloon stick and where should it not? Explain.
- 3) Tie about 40cm of string to the end of your balloon. Use masking tape to tape a Styrofoam cup, right side up, to the center of an aluminum pie plate. Then tape (use masking tape) a Styrofoam plate to your table. Vigorously rub the fur on the Styrofoam plate. Rub the balloon against the fur and then, holding it by the string, bring it close to the Styrofoam plate. Is the balloon attracted or repelled? Why?
- 4) Again charge the Styrofoam plate with the fur. Using the cup as a handle, place the aluminum plate on the Styrofoam plate. Touch your finger to the aluminum plate. What happens? Why?
- 5) Again charge the Styrofoam plate with the fur, and using the cup as a handle, place the aluminum plate on the Styrofoam plate. Lift the aluminum plate off the Styrofoam plate. Bring the charged balloon close to the aluminum plate. Do not let the balloon touch the aluminum plate or let sparks jump from one to the other. Do not set the plate down until you have done step 6). Does the aluminum plate attract or repel the charged balloon? Why?
- 6) Again touch the aluminum pie plate with your finger. Bring the charged balloon close to the aluminum

plate. Do not let the balloon touch the aluminum plate or let sparks jump from one to the other. Does the aluminum plate attract or repel the charged balloon? Why?

7) Pull a couple of strips of Scotch tape from a roll. Each one should be about 15 cm long. Hold them by their ends and slowly bring them close to each other. What happens? Why?

8) One at a time, pass each of the strips of tape lightly between your fingers. Then bring them close to each other. If passing them between your fingers worked, you have discharged the strips and they should neither be attracted nor repelled. If they're not, fully discharged, rub the dry sides against the faucet. Fold over a couple of centimeters of the end of each strip. This gives you a non-sticky handle to work with. Carefully stick the two strips to each other so that the sticky side of one piece adheres to the dry side of the other piece. (You will need to remember which piece is which for step 9.) Now rapidly pull the strips apart. Slowly bring them next to each other. What happens? Why?

9) Once more rub your balloon against the fur. Bring each strip close to the charged side of the balloon. Which strip of tape is negatively charged? How did that happen? So, when you pull a strip of Scotch tape off a roll is it positively or negatively charged?

10) Rub the rubber rod against the fur. Bring the rod close to a suspended pith ball. It should attract; why? Leave the rod in contact with the ball till something else happens. What happens? Why?

11) Rub the rubber rod against the fur. Touch the rod to the ball on the electroscope. What happens to the metal foils in the electroscope? Why?

12) Discharge your electroscope by touching the ball with your finger, or touching it to the faucet, if necessary. Rub the rubber rod against the fur. Bring the charged rod close to the top of the electroscope without touching it. What happens? Why?

13) Discharge your electroscope by touching it with your finger. Bring a negatively charged rod close to one side of the ball. Hold it close enough to have an effect but far enough so that sparks do not jump from the rod to the electroscope. While one person is holding the rod, have a second person briefly touch the opposite side of the ball. Now remove the rod. What happens? Why? (Do your best on this one, but the results are often puzzling to instructors too.)

14) Did the members of your group have any disagreements, possibly about how to carry out the steps or how to interpret the results? How did you resolve those disagreements?

	Excellent (4)	Good (3)	Acceptable (2)	Unacceptable (1)
Effective Communication (Competencies: 1a-c; 5a-d; 6c)	<b>English 102: Analyze communication through reading and writing skills</b>			
	<b>1A: Rhetoric:</b> Uses different rhetorical appeals (logos, ethos, pathos) either as the voice of the paper or to convey attitude or evidence.	May use at least one rhetorical appeal that adds to the paper's voice or conveys an attitude or evidence within the paper itself.	May use rhetorical appeal very little, giving the sense that writer is not using the proper appeals for the given writing situation.	Fails to use appropriate rhetorical appeals.
	<b>1B: Aesthetics:</b> Uses metaphor and other literary devices to convey or support an idea; demonstrates engagement with ideas and sources; brings a distinctive angle to the writing situation.	May use a metaphor or other literary device; demonstrates a novice engagement with ideas and sources but adopts a relatively distinctive quality to the writing.	May or may not use metaphor or literary device but does not demonstrate much engagement with ideas and sources. Does not bring a distinctive personal voice or quality to the writing.	Does not include metaphors or other literary devices and shows a lack of overall engagement with ideas or sources in the sense that the prose is flat.
	<b>1C: Diverse points of view:</b> Explores alternative insights or considers other points of view, such as using counterargument or concession. May challenge assumptions.	Writing is in general one-sided without exploring alternative insights or other points of view. May or may not use counterargument, and may challenge assumptions on occasion.	Writing is one-sided and does not explore alternative insights or other points of view. Might use counterargument but in a way that is basic. Does not challenge assumptions.	Writing is one-sided and does not explore alternative insights or other points of view. Stays with "canned" arguments or plays it safe without challenging assumptions.
	<b>English 102: Employ academic writing styles appropriate for different genres and audiences.</b>			
	<b>English 104: Use an appropriate voice (including syntax and word choice)</b>			
	<b>5A: Situation and Purpose:</b> Follows instructions and criteria, to include format, voice, page limit or word count, structure, and stylistic expression (personal, objective, analytical, etc.)	Follows most instructions and criteria, to include format, voice, page limit or word count, structure, and stylistic expression (personal, objective, analytical, etc.)	Follows some instructions and criteria, to include format, voice, page limit or word count, structure, and stylistic expression (personal, objective, analytical, etc.)	Fails to follow instructions and criteria, to include format, voice, page limit or word count, structure, and stylistic expression (personal, objective, analytical, etc.)
	<b>5B: Genre:</b> Follows the conventions of the genre as assigned by the instructor, such as narrative, definition, argument, process, etc., and adapts to the writing to appeal to a specific audience.	Follows most conventions of the genre as assigned by the instructor, such as narrative, definition, argument, process, etc., and writer adapts to appeal to a specific audience.	Follows some conventions of the genre as assigned by the instructor, such as narrative, definition, argument, process, etc., and the writer (somewhat) adapts to appeal to a specific audience.	Fails to follow conventions of the genre as assigned by the instructor, such as narrative, definition, argument, process, etc., and the writer also fails to adapt to appeal to a specific audience.
	<b>5C: Value and Creativity:</b> Explores angles and everyday objects or ideas in an unusual, surprising, and interesting way. Adds a unique quality to the perspective or written elocution.	Explores angles and everyday objects or ideas in less obvious ways. For the most part, the writer adds a unique quality to the perspective or written elocution.	May explore angles, everyday objects or ideas in less obvious ways. May fail to add a unique quality to the perspective or written elocution.	Fails to explore angles, everyday objects or ideas in unique or less obvious ways. Fails to add a unique quality to the perspective or written elocution.
	<b>5D: Resourcefulness and Independence:</b> Writer takes risks and actively seeks out untested and unconventional approaches to the assignment or to argumentation. Writer adopts, extends, and transforms a unique idea, format, or product to create something new.	Writer takes risks with language, phrases, ideas, and strategies.	Writer may take some risks but holds back when it comes to language, phrases, ideas, and strategies.	Essay either takes no risks, OR mistakes risk-taking as a way to hide a lack of content.

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	<b>6C: Analysis and Discussion:</b> Demonstrates analysis by making points supported by evidence; includes in the discussion a synthesis of sources; includes appropriate primary and/or secondary sources and attends to the quality of the evidence presented.	Organizes evidence to reveal important patterns, differences, or similarities	Organizes evidence, but the organization is not effective in revealing important patterns, differences, or similarities	Lists evidence, but it is not organized and/or does not articulate its relation to the paper's objectives/goals.
Writing Processes (Comps.: 2a-b)	<b>English 102: Employ writing processes such as planning, organizing, composing, and revising.</b> <b>English 104: Employ writing processes such as planning, organizing, composing, and revising.</b>			
	<b>2A: Writing Processes:</b> Final draft indicates that writer has taken time to plan, organize, compose, and revise based on the arrangement of the paper, the strength of the thesis, and lack of common rough draft errors such as weak transitions, typographical errors, and errors in documenting sources.	Includes evidence of planning, drafting, revising, and/or editing that contributes to overall quality of the final work.	Makes some attempts to plan, revise, or edit first draft; but this work does not contribute to the overall quality of the piece.	Makes very few (or no) attempts to plan, revise, or edit first draft of writing.
	<b>2B: Student Knowledge:</b> Student has articulated the steps taken as aligned with the processes of writing, e.g., prewriting, planning, drafting, revising, and editing.	Student articulated the steps taken as aligned with the processes of writing; falls short of the "excellent" category.	Student articulated some of the steps taken as aligned with the processes of writing.	Student articulated very few of or failed to articulate the steps taken as aligned with the processes of writing.
Essay Development (Comps. 3a-e)	<b>English 102: Express a primary purpose and organize supporting points logically.</b> <b>English 104: Analyze the rhetorical situation for purpose, main ideas, support, audience, and organizational strategies in a variety of genres.</b>			
	<b>3A: Focus/Thesis.</b> The central point or argument is clearly stated or easy to identify and is sophisticated in both statement and insight.	Central point or argument is clear, specific, and is easy to identify. May be sophisticated in statement and/or insight.	Central point or argument is clear, general in nature or does not convey the central argument or main point in the paper.	Central point or argument is not clear or easy to identify <b>OR</b> No discernable central point or argument is present.
	<b>3B: Evidence:</b> The evidence in paragraphs back up, show, or prove the thesis. Evidence includes examples, comparisons, scenarios, observations, reasoning, etc. and enough analysis or elaboration to fully explain main ideas.	Examples used to support most points. Some evidence does not support point, or may appear where inappropriate.	Examples used to support some points. Points often lack supporting evidence, or evidence used where inappropriate (often because there may be no clear point).	Very few or very weak examples. General failure to support statements, or evidence seems to support no statement.
	<b>3C: Organization:</b> Paragraphs of support are structured to support the thesis; paragraphs flow (the writers has not switched back and forth between topics); transitions work well to create a steady furthering of ideas and to connect the evidence with the thesis.	All paragraphs have one main idea; each paragraph provides unified, coherent, and developed support for its thesis and supporting ideas.	Some paragraphs contain more than one main idea; Paragraphs contribute unified and coherent support, but paragraphs may be uneven in development and transition.	Many paragraphs contain more than one idea; Paragraphs do not contribute unified and coherent support.
	<b>3D: Unity/Development/Coherence:</b> Sentences are unified within paragraphs;	Provides clear topic sentences and/or transitions in all	Provides topic sentences and transitions in	Provides few or no paragraphs with topic sentences and/or

	paragraphs are fully developed; sentence-level ideas cohere within a paragraph. Transitional words & phrases help reader move from idea to idea. The solution is argued convincingly w/ logic and evidence.	paragraphs; Sentences have few grammatical errors that seriously detract from meaning, but sentences could have been more varied and interesting.	most paragraphs; Sentences are simple and lack variety.	transitions; Sentences are unclear and many grammatical errors in structure make paper virtually unreadable.
	<b>3E: Development and Deepening:</b> The points are elaborated on with details, examples, comparisons, and other types of evidence, giving depth to the overall writing.	In-depth discussion & elaboration in most sections of the paper.	The writer has omitted pertinent content or content runs-on excessively. Quotations from others outweigh the writer's own ideas excessively.	Cursory discussion in all the sections of the paper or brief discussion in only a few sections.
Source Integration (Comps. 4a-e)	<b>English 102: Use and document research evidence appropriate for college-level writing. English 104: Integrate information from sources to effectively support claims as well as other purposes (to provide background information, evidence/examples, illustrate an alternative view, etc.).</b>			
	<b>4A: Documented research as evidence:</b> Evidence makes the paper's intent clear by supporting claims, illustrating points, demonstrating facts, providing background information, spring-boarding into counterargument, etc.	Evidence demonstrates consistency in making the paper's intent clear but use of additional source information could strengthen the intent, explanation, or argument.	Evidence may or may not make the paper's intent clear but additional source information should be added to strengthen secondary claims. Documented research as evidence is lacking such that statements are sometimes unfounded.	Demonstrates a limited attempt to use sources to support ideas in the writing.
	<b>4B: Integrating quotations and paraphrases:</b> Sources are integrated smoothly and correctly through proper techniques, such as by paraphrases, summaries, and quotations.	Most sources are integrated smoothly and relatively correctly through proper paraphrases, summaries, and quotations. There may be a transition missing.	Few sources are integrated correctly through proper paraphrases, summaries, and quotations.	Fails to integrate sources through proper paraphrases, summaries, and quotations.
	<b>English 104: Use a variety of research methods to gather appropriate, credible information. Quote, paraphrase, and summarize sources ethically, citing and documenting them appropriately.</b>			
	<b>4C: Source Types:</b> Supporting evidence is accurate, current, appropriate, variegated, credible, and sufficient. Includes a variety of source types, e.g., journals, WWW, videos, etc.	Provides essential, accurate evidence to support the central position with the required research sources that are mostly relevant, accurate, and reliable.	Provides some evidence to support the central position with only a few research sources. Some sources may not be relevant, accurate, and reliable.	Lacks sufficient research sources to support the central position and/or, if included, are generally not relevant, accurate, or reliable. Contains numerous factual mistakes, omissions, or oversimplifications.
	<b>4D: In-text citation mechanics:</b> In-text citations are accurate in terms of MLA or APA format.	In-text citations are mostly accurate in terms of MLA or APA format.	In-text citations are somewhat accurate in terms of MLA or APA format.	In-text citations are not accurate in terms of MLA or APA format.
	<b>4E: Works Cited/References page:</b> Works Cited (MLA) or References (APA) page is formatted accurately. Entries are alphabetized and arranged in accurate formatting order, such as Author. (year). Title. Source. Publication Information.	Provides a Works Cited/References page, formatted correctly with some errors, for instance, the list is not alphabetized or even though formatting is a bit out of sequence it would be entirely possible to identify and locate the source.	Provides a Works Cited/References page, poorly formatted or with abundant errors. Maybe a source could be identified and located, but the lack of formatting makes identification uncertain.	Provides a Works Cited/References page that shows little or no attempt at appropriate and correct formatting.



Technical Aspects 6a-b)	<b>English 102: Identify and correct grammatical and mechanical errors in students' writing.</b>			
	<b>6A: Grammar, Punctuation, Mechanics, and Spelling:</b> Complete sentences; avoids FRAG, RO, CS (i.e., sentence boundaries); unity, development, variety, absence of redundancy, etc. S/V agreement, pronoun consistency, tenses; commas; apostrophes; placement of quotation marks, question marks, etc.	Uses straightforward language that generally conveys meaning to readers. Occasional errors and minor problems with mechanics of language. Occasional awkward sentences and poor transitions reduce readability.	Uses language that generally conveys meaning to readers with clarity, although writing may include some errors. Frequent problems with mechanics of language. Awkward sentence construction. Poor or absent transitions. Frequently difficult to understand.	Uses language that sometimes impedes meaning because of errors in usage. Problems with the mechanics of language serious enough to interfere with effective communication. Frequent errors in punctuation, spelling, sentence structure, etc.
	<b>6B: Expression, Wording, and Phrasing:</b> Maintains a distinctive and convincing voice appropriate to the rhetorical situation. Includes coherences, diction, word usage, syntax. The language is precise, the wording is exact and accurate.	The writer sustains an appropriate voice. The essay is handled with clarity and purpose, and occasional sophistication	The writer's voice is occasionally inappropriate or lacking purpose. The essay is handled without sophistication.	The writer is unable to sustain an appropriate voice. The essay may be potentially interesting but is handled without clarity or purpose.

**PAPERS MAY RECEIVE A GRADE OF "F" FOR ANY ONE OF THE FOLLOWING:**

Paper does not meet page or word count requirement	Paper is off topic	Paper has no discernible thesis	Paper has extensive errors that interfere with communication of ideas	More than 4 or more marks in "Unacceptable" column	Plagiarism: Overwhelmingly evident that student voice is not discernible to the instructor.	No in-text citations  <b>OR</b>  No works cited or reference page	Uses inappropriate sources: .com or generalized encyclopedias
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Nombre: \_\_\_\_\_

### Use the correct conjugated form of the “Verbo Estar”.

1. Los perros \_\_\_\_\_ en la calle.
2. Nosotros \_\_\_\_\_ en la clase.
3. Ellos \_\_\_\_\_ en la tienda.
4. ¿En dónde \_\_\_\_\_ los libros?
5. Manuel \_\_\_\_\_ enfermo.

### Matching like terms

- |   |   |
|---|---|
| _____ Ellos comen pescado.                | A.) My sister likes to eat soups.         |
| _____ La cena está preparada.             | B.) She would like a slice of watermelon. |
| _____ Yo no quiero ensalada.              | C.) Why do you like to eat ice cream?     |
| _____ A mi hermana le gusta la sopa.      | D.) They are eating fish.                 |
| _____ Me gusta el café con leche.         | E.) Did you ask for some milk?            |
| _____ Él quiere ir a un restaurante.      | F.) Dinner is ready                       |
| _____ ¿Porque te gusta comer hielo?       | G.) He is serving the potatoes.           |
| _____ Él sirve las papas.                 | H.) I do not want any salad.              |
| _____ ¿Tu pediste leche?                  | I.) I like to drink my coffee with milk.  |
| _____ Ella quiere una rebanada de sandía. | J.) He wants to go to a restaurant.       |

### What is happening in the present progressive

- Sara esta (swimming) \_\_\_\_\_ en el lago.
- Elvira esta (preparing) \_\_\_\_\_ la cena los miércoles.

Nombre: \_\_\_\_\_

**Translation: Write the correct English or Spanish word.**

Aguacate \_\_\_\_\_

Apple \_\_\_\_\_

Fish \_\_\_\_\_

Dessert \_\_\_\_\_

Helado \_\_\_\_\_

Durazno \_\_\_\_\_

Sandía \_\_\_\_\_

Pepino \_\_\_\_\_

Herbs \_\_\_\_\_

Spinach \_\_\_\_\_

Celery \_\_\_\_\_

Jugo \_\_\_\_\_

Agua \_\_\_\_\_

Arroz \_\_\_\_\_

Cebolla \_\_\_\_\_

egg \_\_\_\_\_

Lechuga \_\_\_\_\_

**Fill in the blank to complete the sentence in the present progressive form.**

Ellas comen enchiladas. --> Ellas \_\_\_\_\_ enchiladas.

El perro corre tras el gato --> El perro \_\_\_\_\_ tras el gato.

Nosotros estudiamos en la librería --> Nosotros \_\_\_\_\_ en la librería.

Yo limpio la casa --> Yo \_\_\_\_\_ la casa.

Tú hablas por teléfono. --> Tu \_\_\_\_\_ por teléfono.

**El verbo Tener:**

Víctor y Linda \_\_\_\_\_ una casa grande

María \_\_\_\_\_ tres gatos y un perro.

Nosotros \_\_\_\_\_ cinco hijos.

Ellos \_\_\_\_\_ doce nietos y una nieta.

¿Usted no \_\_\_\_\_ carro?

Nombre: \_\_\_\_\_

## El verbo Ser:

Yo \_\_\_\_\_ la profesora.

¿De dónde \_\_\_\_\_ tú?

Los papeles \_\_\_\_\_ de los estudiantes.

El \_\_\_\_\_ una persona inteligente.

Nosotros \_\_\_\_\_ muy buenos amigos.

¿Qué día \_\_\_\_\_ hoy?

Nosotros \_\_\_\_\_ morenos.

¿Estos \_\_\_\_\_ tus perros?

Mi familia y yo \_\_\_\_\_ de China.

¿Cuáles \_\_\_\_\_ los días de la semana?

## Write the correct Spanish present indicative form of the verb.

to swim \_\_\_\_\_

to work \_\_\_\_\_

to have \_\_\_\_\_

to read \_\_\_\_\_

to play \_\_\_\_\_

to need \_\_\_\_\_

to dance \_\_\_\_\_

to prepare \_\_\_\_\_

to talk \_\_\_\_\_

to ask \_\_\_\_\_

Nombre: \_\_\_\_\_

**Masculine or feminine write El or La.**

\_\_\_\_\_ melón

\_\_\_\_\_ pollo

\_\_\_\_\_ perro caliente

\_\_\_\_\_ queso

\_\_\_\_\_ tostada.

\_\_\_\_\_ bistec

\_\_\_\_\_ hamburguesa

\_\_\_\_\_ leche

**Complete the sentences by choosing the correct form of the verb "gustar" .**

A Miguel \_\_\_\_\_ los animales.

A nosotros \_\_\_\_\_ trabajar.

A Vincent y Manuel \_\_\_\_\_ los carros.

A Gabby \_\_\_\_\_ las tortugas.

A Isabel \_\_\_\_\_ comer.

A Lorenzo \_\_\_\_\_ los chicharrones.

**Read the sentences below; determine which word/s need an accent by placing an accent over the correct letter.**

1. El es alto.
2. A mi me gusta el te.
3. Aquí llueve(rains) mas que en Las Cruces.
4. El cabello es negro.
5. Tu eres de Arizona.
6. Si no empieza a nevar (snow) si voy a la escuela.
7. Ese es tu perro.

Nombre: \_\_\_\_\_

**Spell the correct conjugated form of the word in Spanish.**

Juan (practices) \_\_\_\_\_ futbol todos los Sábados.

Ella (listens) \_\_\_\_\_ la radio por la noche.

Nosotros (walk) \_\_\_\_\_ por el parque ayer.

Marcos no (works) \_\_\_\_\_ en Sears.

Yo (wait) \_\_\_\_\_ el autobús en esa esquina.

Miguel (crys) \_\_\_\_\_ por su perro.

Yo no (write) \_\_\_\_\_ con un lápiz.

¿Ustedes (talk) \_\_\_\_\_ mucho por teléfono?

**Read and complete the following passage by choosing the answer that correctly fits the blank. No repeat words.**

**manzana, restaurante, pollo, hermano, estoy, estas, postre, chile, arroz**

Mi amigo, José:

Como \_\_\_\_\_? Yo \_\_\_\_\_ bien. Ayer, mí \_\_\_\_\_ y yo fuimos a un \_\_\_\_\_ nuevo. Nos gustó mucho especialmente el sabor del \_\_\_\_\_ picoso. Mi hermano ordeno un plato de \_\_\_\_\_ con \_\_\_\_\_. Yo ordene un bistec y papas. Para el \_\_\_\_\_, ordenamos un pastel de \_\_\_\_\_. ¡Estaba delicioso! Algún día, iremos allí tú y yo.

Hasta pronto,

Sarah

- 62) Tay-Sachs disease causes nerve cells to malfunction and results in death by age 4. Two healthy parents know from blood tests that each parent carries a recessive allele responsible for Tay-Sachs.
- (a) If their first three children have the disease, what is the probability that their fourth child will **not**? \_\_\_\_\_
- (b) Assuming that they have not yet had a child, what is the probability that, if they have four children, all four will have the disease? \_\_\_\_\_
- (c) If their first three children are male, what is the probability that their fourth child will be male? \_\_\_\_\_
- 63) In cats, the *Manx* allele (*M*) causes a short or absent tail, while a recessive allele *m* confers a normal, long tail. Cats of genotype *MM* die as embryos. If two Manx cats mate, what is the probability that each *surviving* kitten has a long tail? Explain your answer.

Genetics  
2410+  
2410L

Appendix One  
Critical Thinking

- 64) As a genetic counselor, you routinely advise couples about the possibility of genetic disease in their offspring based on their family histories. This morning you met with an engaged couple, both of whom are phenotypically normal. The man, however, has a brother who died of Duchenne-type muscular dystrophy, an X-linked condition that results in death before the age of 20. The allele responsible for this disease is recessive. His prospective bride, whose family has no history of the disease, is worried that the couple's sons or daughters might be afflicted.

a) How would you advise this couple?

b) The sister of this man is planning to marry his fiancé's brother. How would you advise this second couple?





- 65) In Klingons of Star Trek fame, one gene determines hair texture; another gene determines whether the individual will have a sagittal crest (a protrusion on the forehead). The two genes are not linked.

$K$  = curly Klingon hair (dominant)

$k$  = silky earthling-like hair (recessive)

$S$  = large sagittal crest (dominant)

$s$  = smooth, flat, earthling-like forehead (recessive)

Kayless is a half-human, half-Klingon with the genotype  $KkSs$ . He mates with an individual that is also heterozygous for both genes.

- Set up a Punnett square for this dihybrid cross. Hard work!!!

Principles of Biology: Genetics  
Bio 2410  
+ 2410L

Appendix Two

Quant. Reasoning

- What are the four possible phenotypes that may result from this mating? Include a description of both hair and forehead for each phenotype.
- What is the expected phenotypic ratio from the dihybrid cross?
- What fraction of the progeny is expected to be heterozygous for both genes?
- What fraction is expected to be homozygous for both genes?



Bio 2410  
- Genetics

# Appendix Three

## Genetic disease presentation

### BIOL 202L

An extremely interesting part of studying genetics are the diseases and disorders caused by genetics. In lecture, we will discuss Huntington's disease, Down's syndrome, sickle cell anemia, red/green colorblindness and hemophilia in significant detail. However, there are many other interesting genetic diseases/disorders. Please choose a genetic disorder/disease that we are not covering in detail in class and investigate the disorder/disease further.

For your chosen disease you should investigate at least the following topics:

- Basic description of the disease – cause(s), impact, perhaps treatment
- Genetics of inheritance – e.g. dominant/recessive, locus, alleles
- What "tools" were used to describe the inheritance pattern? – e.g. sequencing, pedigree

This assignment has three separate deliverables due:

#### 1. Consult with a librarian (30 pts) – due two weeks before your presentation

You will need a minimum of **3 peer-reviewed sources** to support your assertions in this project. The librarians are wizards at finding peer-reviewed and other sources. The first part of this assignment is to consult with a wizard librarian to help find some peer-reviewed resources. Just a reminder that peer reviewed sources are **almost always journal articles**; books are as a rule not peer reviewed and websites are definitely not peer reviewed.

For this first assignment you should turn in a bibliography of potential sources and the signed librarian form. Be sure to use the Auk format for citing your sources (see more details at the end of this assignment).

#### 2. Annotated bibliography handout (60 pts) – due one week before your presentation

An annotated bibliography is a way for you to organize your materials and thoughts about a project. Annotated bibliographies are also a way to communicate information about your findings to peers. An annotated bibliography is a list of resources cited properly (see below). Below each citation you should write 5-10 sentences about what this resource talks about (minimum 120 words); what is the main argument, who makes the argument and is it believable? How does this citation address the genetic disease that you are investigating? See an example of an annotation below.

Think about this annotated bibliography assignment as a way for you to share what you have learned about your genetic disease, by sharing a synopsis of your sources. You must cite a **minimum of 3 sources** for this assignment.

In addition, include **2 multiple-choice questions** with 4 wrong answers and 1 correct answer that is connected with your presentation; you could even use the multiple-choice questions in your presentation to assess your colleagues' understanding of your presentation.

How you write is as important as **WHAT** you write. I expect polished, typewritten prose free of grammatical and spelling errors.

### 3. Oral teaching presentation (60 pts) – due on the day of your presentation

You will present your research results in a 10-12-minute oral presentation to the class. Your presentation should address the three topics by **presenting figures from at least 3 peer-reviewed papers to support your assertions**. Your presentation should be organized, interesting and informative. For this part of the assignment you are **required** to use PowerPoint (or some other similar program) as a tool to help teach your peers about your topic. (If you have not used PowerPoint, I can help you explore this simple tool.) As you are doing your research keep your eyes open for visual aids (e.g. picture, graphs, maps) that can help you tell your story.

In order to leave time for everyone's presentations, each will be very strictly limited to the 10-12-minute length. Practice your presentation to be sure it will fit within the time limit; practice in front of a mirror or before your family/housemates/friends.

### Proper citation of sources following The Auk format

In academics in general and science in particular, we strive to support our assertions with data. If I tell you that the earth is flat, you are unlikely to believe me unless I provide a source that supports my assertion. I can provide a source that indeed asserts that the world is flat (e.g. Anonymous 2016), and providing you with the source allows you to evaluate how much you actually trust that source. In this class we will be following the citation format used by the scientific journal *The Auk* to make sure we provide all the information necessary to find and evaluate the source(s) that you provide. Below are examples of citations in *The Auk* format:

Ankney, C.D., and R.T. Alisauskas (1991). The use of nutrients by breeding waterfowl. *Proceedings of the International Ornithological Congress* 20:2170-2176.

Anonymous (2016). About the Flat Earth Society. Flat Earth Society. [www.TheFlatEarthSociety.org](http://www.TheFlatEarthSociety.org).

Dagney, J.T. (2001). Use of honeyguides by native peoples. *Auk* 113:220-226.

Johnson, P. (2005). Climbing high on a cloud. Cloudcliff Institute.  
[www.cloudcliff.com/climbing.html](http://www.cloudcliff.com/climbing.html)

Rappole, J., and D. Warner (1980). Ecological aspects of migrant bird behavior in Veracruz, Mexico. Pp. 353-393. /n A. Keast and E.S. Morton [eds.], *Migrant birds in the Neotropics: ecology, behavior, distribution, and conservation*. Smithsonian Institution Press, Washington, DC.

Rudзитis, G., P.J. Johnson and H.G. Rajna (1996). *Wilderness and the changing American West*. John Wiley and Sons, Inc., New York.

*Notice* that you cite references in alphabetical order according to the authors' surnames, and do not abbreviate names of publications. The first line is flush with the left margin and all other lines are indented. The website [www.CiteThisForMe.com](http://www.CiteThisForMe.com) does a good job formatting properly for *The Auk* style; choose "The Auk" as the format in #2. This website has some excellent information about writing annotations <http://writingcenter.unc.edu/handouts/annotated-bibliographies/>

*Example of an annotation*

Grumbine, R.E. (1992). *Ghost Bears: exploring the biodiversity crisis*. Island Press, Washington, DC.

Grumbine's book is a heartfelt exploration of the biodiversity crisis, and explores the ways conservation biology can aid in repairing our damaged earth. The book combines his personal experience and reviews the scientific conservation literature. Grumbine uses excellent examples mostly from the Pacific Northwest, focusing on the Cascades area. In addition, the book reviews the historic process leading to the creation of public lands and the agencies that are charged with "managing" them. The audience for this book is the general public with an interest in science, so the level of discussion and the cited resources are perfect for this research assignment. As an aside, this book stemmed from the author's doctoral dissertation work. *Ghost Bears* will give excellent examples and historical context for the question of endangered species reintroduction.



Agricultural and Extension Education 201G

***EFFECTIVE LEADERSHIP AND COMMUNICATION  
IN AGRICULTURAL ORGANIZATIONS***

ASSIGNMENT SHEET 3  
PREPARED PERSUASIVE SPEECHES  
(125 points or 10% of the course grade)

**General**

During labs from March 4 through March 8 and March 11 through March 15 (two lab periods) each class member will present a 4 to 6-minute prepared persuasive speech based on a **proposition related to a local, state, national, or international issue**. Each class member will develop a proposition of fact, evaluation, or policy and submit it to their lab instructor during lab the week of February 25 through March 1. They will prepare and practice their persuasive speech outside of the class. While preparing your speech, you may make written reference notes for the Introduction, Body, and Conclusion sections on 3x5" or 5x7" index cards or develop an outline printed on 8.5x11" paper to use in practice and delivery (computers and scripts are not allowed as substitutes for the cards or an outline and will incur a 10% penalty). These materials will be collected after each speech to facilitate grading. A bibliography of three or more credible (authority, experience, and/or research-based) references is required and will also be collected after each presentation. This list must be in the accepted bibliographical style of your technical field of study (example: American Psychological Association or APA Style).

The purposes of persuasive speeches are to reinforce a belief an audience holds, to change a belief an audience holds, or to move an audience to act. Five ways to organize your prepared persuasive speech are the listing-of-reasons design, the problem-solution design, the comparative advantages design, the criteria satisfaction design, and the rejection-of-alternatives design. Successful persuasive speeches are "credible, logical in organization, emotional where appropriate, ethical, and delivered with confidence" (Cheek, Arrington, Rudd, & McGhee, 2000, p. 128).

**Format**

Your speech will have three major sections: Introduction, Body, and Conclusion.

**Introduction:** Some people say that the introduction tells the audience what you are going to say in the body of your speech, but there is a little more to it than that. The purposes of this section of a persuasive speech are to gain attention, stimulate interest, and establish rapport with the audience while sharing your proposition, and the main points (at least three) you'll develop in the body of the presentation. You can measure your success by how motivated the audience is to pay attention to the rest of your speech. Vivid verbal illustrations like anecdotes (stories) and analogies (using the familiar to explain the new), personal examples of the speaker, direct quotations, and startling statistics related to the proposition can help you achieve a successful introduction. Many speakers like to build up to the proposition and main points and use them as a transition between the introduction and body. Suggested time: 1 minute.

**Body:** The purpose of this section of the speech is to develop the three or more major points previewed in the introduction clearly and logically. While you will present data/facts in this section, don't be a slave to content at the expense of clarity and interest. Clarity is established by using simple but precise language, defining new terms and acronyms, and clarifying difficult concepts by using examples, startling statistics, and vivid verbal illustrations (e.g., anecdotes and analogies). If you use a variety of these methods, add personalizing touches, and continue to demonstrate relevancy to the audience, your speech will be interesting. Transitional statements between introduction and body, main points, and body and conclusion must also be clear to be effective. Suggested time: 3.5 minutes.

**Conclusion:** Some people say that the conclusion tells the audience what you just told them. That is fairly accurate. Summarize the main points of your speech clearly and concisely. Think of an inspirational way to specifically call for a change in attitude or behavior to end the speech. Save an appropriate high-impact anecdote, analogy, etc. to end on. Suggested time: 1 minute



### Evaluation

The prepared persuasive speech will be evaluated with the Persuasive Speech Evaluation Form in your textbook (Cheek, Arrington, Rudd, & McGhee, 2000, pp. 293-294) (125 points):

1. 25 points for the **Introduction** section
2. 35 points for the **Body** section
3. 15 points for the **Conclusion** section
4. 35 points for **Delivery** (enthusiasm; appropriate dress; eye contact; vocal variety, emphasis, volume, and clarity; not excessively using notes; poise and posture; and within the time limit). One point will be deducted from the total of five time points possible for each 15 seconds over or under the four to six-minute time limit.
5. 10 points for appropriately utilizing one high-quality **Visual Aid** somewhere during the presentation (e.g., a news headline, picture, figure, or graph; a real object; a full-sized chart or poster). The document camera/digital projector combination is the only electronic projection technology available for student use on this speech.
6. 5 points for handing in a list of three or more credible references used to develop your speech (should be cited appropriately in the speech as well), formatted in APA Style or the accepted bibliographical style of your technical field of study.
7. Remember that computers and scripts are not allowed as substitutes for note cards or an outline and will incur a 10% penalty if used.

### Reference

Cheek, J. G., Arrington, L. R., Rudd, R. D., & McGhee, M. B. (2000). *Effective oral communication* (2<sup>nd</sup> ed.). Danville, IL: The Interstate Publishers, Inc. (A copy is on reserve in GT 111)

## Persuasive Speech Evaluation Form

*Criteria*

*Scale\**

### Introduction

The introduction gained attention and stimulated interest in the topic.

E    VG    G    F    P

The speaker established rapport with the audience.

E    VG    G    F    P

The persuasive proposition was clearly established.

E    VG    G    F    P

The main points to be covered in the body were clearly introduced.

E    VG    G    F    P

The transition between the introduction and the body was clear and distinct.

E    VG    G    F    P

### Body

The topic and persuasive proposition were suitable in scope and complexity.

E    VG    G    F    P

The major points were adequately expanded.

E    VG    G    F    P

The body was logically organized.

E    VG    G    F    P

The transitions between main points were clear.

E    VG    G    F    P

Arguments were persuasive, not merely informative.

E    VG    G    F    P

Arguments were supported by an effective mix of evidence.

E    VG    G    F    P

The language related to audience needs and interests.

E    VG    G    F    P

### Conclusion

The transition between the body and the conclusion was clear and distinct.

E    VG    G    F    P

The conclusion summarized key arguments.

E    VG    G    F    P

## Criteria

## Scale\*

The conclusion called specifically for a change in attitude or behavior.

E VG G F P

## Delivery

The speaker was enthusiastic.

E VG G F P

The speaker was appropriately dressed.

E VG G F P

The speaker looked at members of the audience during the presentation.

E VG G F P

The speaker exhibited good vocal variety, emphasis, volume, and clarity.

E VG G F P

The speaker did not use notes excessively.

E VG G F P

The speaker was poised and exhibited good posture.

E VG G F P

The speaker was within the time limit.

E VG G F P

~~The speaker responded well to questions.~~

~~E VG G F P~~

## Visuals

Visuals were of high quality.

E VG G F P

Visuals were used appropriately.

E VG G F P

~~Sufficient visuals were used.~~

~~E VG G F P~~

## ~~Deduction for Excessive Reading~~

~~0 5% 10% 15% 20%~~

BIBLIOGRAPHY (in professional format) (5 Points)

Computer or Script Use Penalty (10% or 12.5 Point Deduction)

\*Rating Scale: E = Excellent; VG = Very Good; G = Good; F = Fair; P = Poor

Final Score and Percentage

Class Points

Rate the speech as:

Excellent

Very Good

Good

Fair

Poor

Comments:

Source: Cheek, Arrington, Rudd, & McGhee, 2000, 293-294.

## Conceptual Survey in Electricity and Magnetism (CSEM)

In any question referring to current, conventional current will be used (where conventional current is the flow of positive charges). In addition, all effects due to the earth's magnetic field will be so small that they will be ignored. Note that the term "particle" is meant to be an object without size or structure.

1. A hollow metal sphere is electrically neutral (no excess charge). A small amount of negative charge is suddenly placed at one point P on this metal sphere. If we check on this excess negative charge a few seconds later we will find one of the following possibilities:
  - (a) All of the excess charge remains right around P.
  - (b) The excess charge has distributed itself evenly over the outside surface of the sphere.
  - (c) The excess charge is evenly distributed over the inside and outside surface.
  - (d) Most of the charge is still at point P, but some will have spread over the sphere.
  - (e) There will be no excess charge left.
2. A hollow sphere made out of electrically insulating material is electrically neutral (no excess charge). A small amount of negative charge is suddenly placed at one point P on the outside of this sphere. If we check on this excess negative charge a few seconds later we will find one of the following possibilities:
  - (a) All of the excess charge remains right around P.
  - (b) The excess charge has distributed itself evenly over the outside surface of the sphere.
  - (c) The excess charge is evenly distributed over the inside and outside surface.
  - (d) Most of the charge is still at point P, but some will have spread over the sphere.
  - (e) There will be no excess charge left.

For questions 3 -5:

Two small objects each with a net charge of  $+Q$  exert a force of magnitude  $F$  on each other.



We replace one of the objects with another whose net charge is  $+4Q$ :



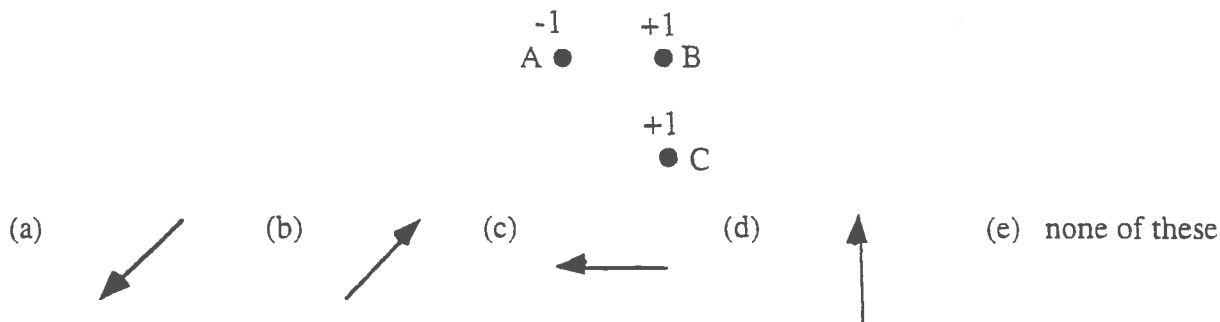
3. The original magnitude of the force on the  $+Q$  charge was  $F$ ; what is the magnitude of the force on the  $+Q$  now?
  - (a)  $16F$
  - (b)  $4F$
  - (c)  $F$
  - (d)  $F/4$
  - (e) other
4. What is the magnitude of the force on the  $+4Q$  charge?
  - (a)  $16F$
  - (b)  $4F$
  - (c)  $F$
  - (d)  $F/4$
  - (e) other

Next we move the  $+Q$  and  $+4Q$  charges to be 3 times as far apart as they were:

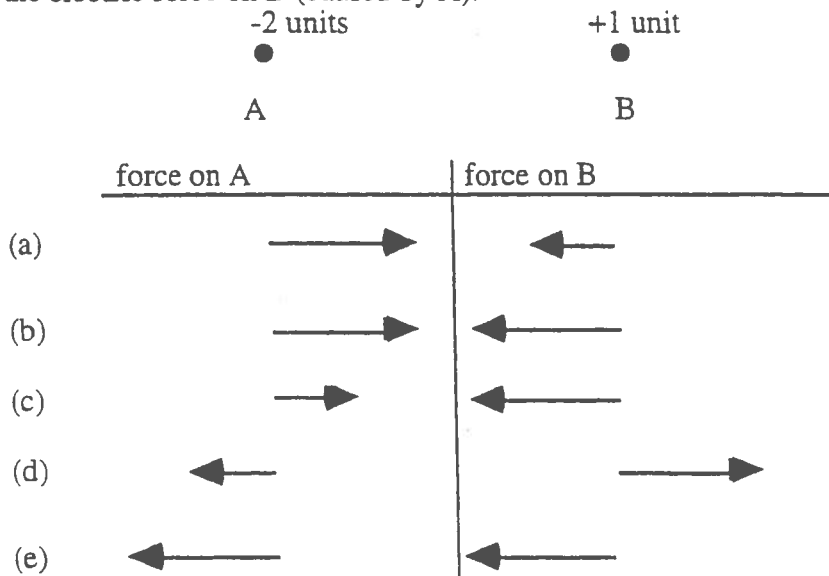


5. Now what is the magnitude of the force on the  $+4Q$ ?
  - (a)  $F/9$
  - (b)  $F/3$
  - (c)  $4F/9$
  - (d)  $4F/3$
  - (e) other

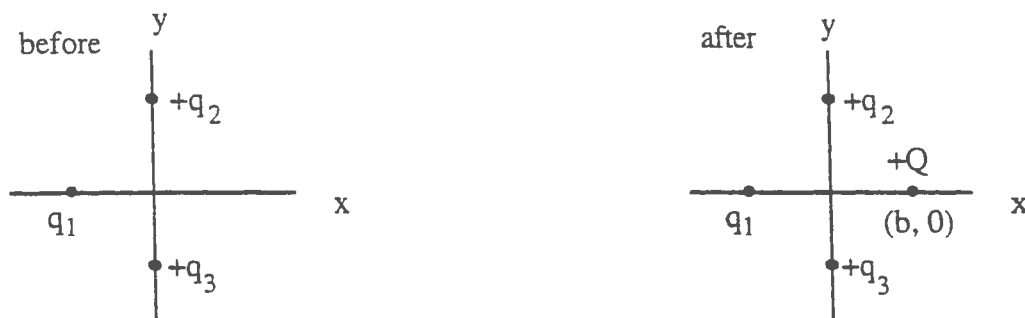
6. Which of the arrows is in the direction of the net force on charge B?



7. The picture below shows a particle (labeled B) which has a net electric charge of +1 unit. Several centimeters to the left is another particle (labeled A) which has a net charge of -2 units. Choose the pair of force vectors (the arrows) that correctly compare the electric force on A (caused by B) with the electric force on B (caused by A).



8. In the figure below, positive charges  $q_2$  and  $q_3$  exert on charge  $q_1$  a net electric force that points along the +x axis. If a positive charge  $Q$  is added at  $(b,0)$ , what now will happen to the force on  $q_1$ ? (All charges are fixed at their locations.)



- (a) No change in the size of the net force since  $Q$  is on the x-axis.  
 (b) The size of the net force will change but not the direction.  
 (c) The net force will decrease and the direction may change because of the interaction between  $Q$  and the positive charges  $q_2$  and  $q_3$ .  
 (d) The net force will increase and the direction may change because of the interaction between  $Q$  and the positive charges  $q_2$  and  $q_3$ .  
 (e) Cannot determine without knowing the magnitude of  $q_1$  and/or  $Q$ .

9. In the figure below, the electric field at point P is directed upward along the y-axis. If a negative charge  $-Q$  is added at a point on the positive y-axis, what happens to the field at P? (All of the charges are fixed in position.)

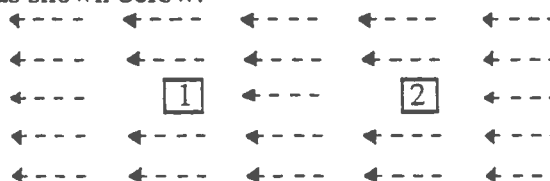


- (a) Nothing since  $-Q$  is on the y-axis.
- (b) Strength will increase because  $-Q$  is negative.
- (c) Strength will decrease and direction may change because of the interactions between  $-Q$  and the two negative  $q$ 's.
- (d) Strength will increase and direction may change because of the interactions between  $-Q$  and the two negative  $q$ 's.
- (e) Cannot determine without knowing the forces  $-Q$  exerts on the two negative  $q$ 's.

#### FOR QUESTIONS 10-11

A positive charge is placed at rest at the center of a region of space in which there is a uniform, three-dimensional electric field. (A uniform field is one whose strength and direction are the same at all points within the *region*.)

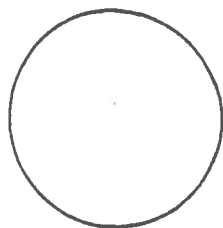
10. When the positive charge is released from rest in the uniform electric field, what will its subsequent motion be?
- (a) It will move at a constant speed.
  - (b) It will move at a constant velocity.
  - (c) It will move at a constant acceleration.
  - (d) It will move with a linearly changing acceleration.
  - (e) It will remain at rest in its initial position.
11. What happens to the electric potential energy of the positive charge, after the charge is released from rest in the uniform electric field?
- (a) It will remain constant because the electric field is uniform.
  - (b) It will remain constant because the charge remains at rest.
  - (c) It will increase because the charge will move in the direction of the electric field.
  - (d) It will decrease because the charge will move in the opposite direction of the electric field.
  - (e) It will decrease because the charge will move in the direction of the electric field.
12. A positive charge might be placed at one of two different locations in a region where there is a uniform electric field, as shown below.



How do the electric forces on the charge at positions 1 and 2 compare?

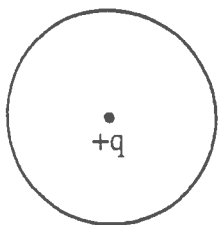
- (a) Force on the charge is greater at 1.
- (b) Force on the charge is greater at 2.
- (c) Force at both positions is zero.
- (d) Force at both positions is the same but not zero.
- (e) Force at both positions has the same magnitude but is in opposite directions.

13. The figure below shows a hollow conducting metal sphere which was given initially an evenly distributed positive (+) charge on its surface. Then a positive charge  $+Q$  was brought up near the sphere as shown. What is the direction of the electric field at the center of the sphere after the positive charge  $+Q$  is brought up near the sphere?



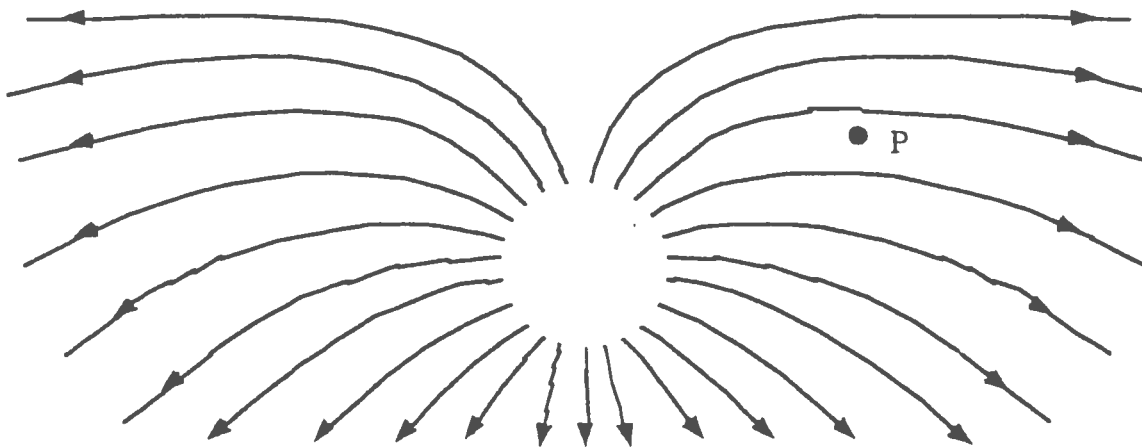
- (a) Left
- (b) Right
- (c) Up
- (d) Down
- (e) Zero field

14. The figure below shows an electric charge  $q$  located at the center of a hollow uncharged conducting metal sphere. Outside the sphere is a second charge  $Q$ . Both charges are positive. Choose the description below that describes the net electrical forces on each charge in this situation.



- (a) Both charges experience the same net force directed away from each other.
- (b) No net force is experienced by either charge.
- (c) There is no force on  $Q$  but a net force on  $q$ .
- (d) There is no force on  $q$  but a net force on  $Q$ .
- (e) Both charges experience a net force but they are different from each other.

USE THE FOLLOWING ELECTRIC FIELD DIAGRAM FOR QUESTION 15.

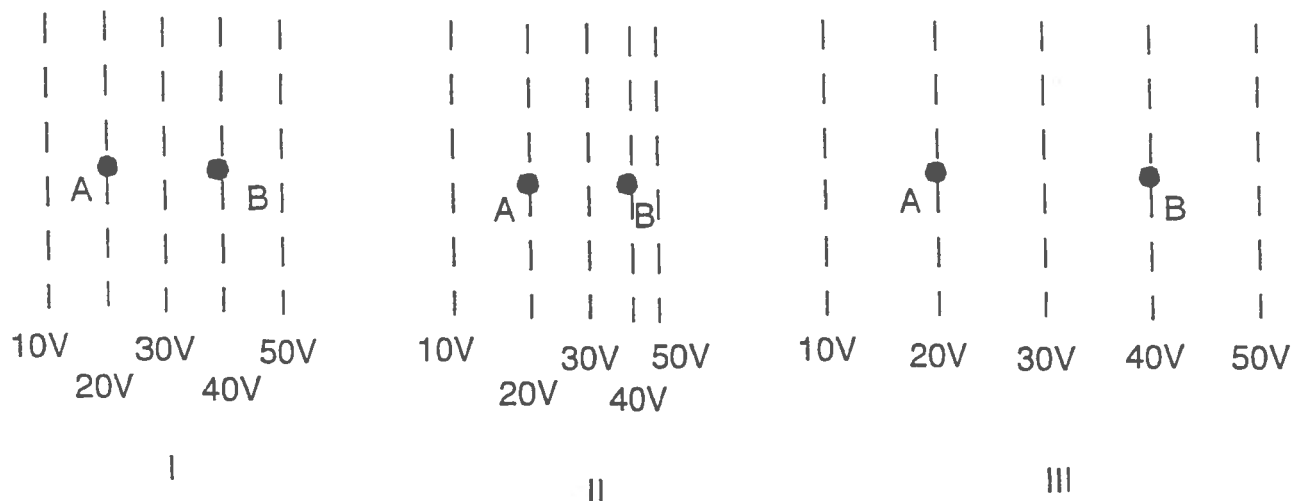


15. What is the direction of the electric force on a negative charge at point P in the diagram above?
- (a) ←
  - (b) ↙
  - (c) →
  - (d) ↗
  - (e) the force is zero

16. An electron is placed at a position on the x-axis where the electric potential is + 10 V. Which idea below best describes the future motion of the electron?
- The electron will move left (-x) since it is negatively charged.
  - The electron will move right (+x) since it is negatively charged.
  - The electron will move left (-x) since the potential is positive.
  - The electron will move right (+x) since the potential is positive.
  - The motion cannot be predicted with the information given.

FOR QUESTIONS 17-19

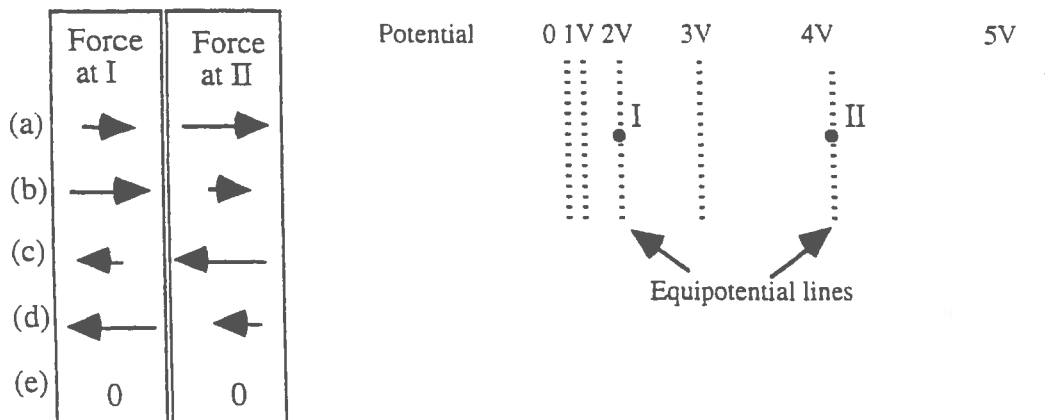
In the figures below, the dotted lines show the equipotential lines of electric fields. (A charge moving along a line of equal potential would have a constant electric potential energy.) A charged object is moved directly from point A to point B. The charge on the object is +1  $\mu\text{C}$ .



17. How does the amount of work needed to move this charge compare for these three cases?
- Most work required in I.
  - Most work required in II.
  - Most work required in III.
  - I and II require the same amount of work but less than III.
  - All three would require the same amount of work.
18. How does the magnitude of the electric field at B compare for these three cases?
- $I > III > II$
  - $I > II > III$
  - $III > I > II$
  - $II > I > III$
  - $I = II = III$
19. For case III what is the direction of the electric force exerted by the field on the + 1  $\mu\text{C}$  charged object when at A and when at B?
- left at A and left at B
  - right at A and right at B
  - left at A and right at B
  - right at A and left at B
  - no electric force at either.



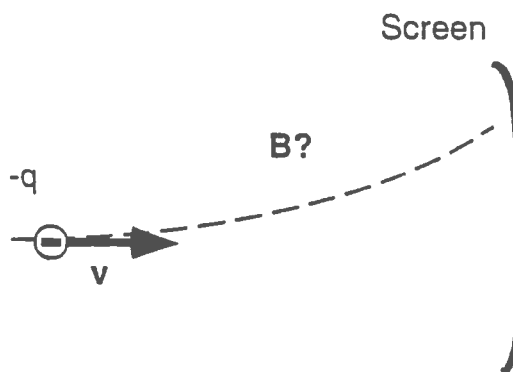
20. A positively-charged proton is first placed at rest at position I and then later at position II in a region whose electric potential (voltage) is described by the equipotential lines. Which set of arrows on the left below best describes the relative magnitudes and directions of the electric force exerted on the proton when at position I or II?



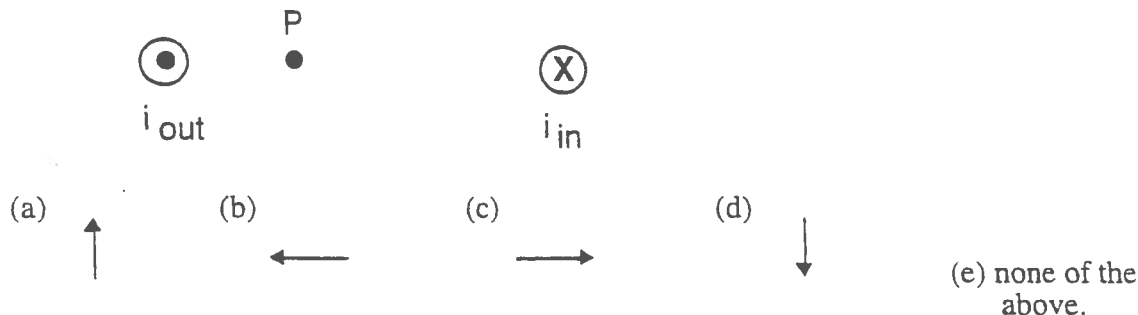
21. What happens to a positive charge that is placed at rest in a uniform magnetic field? (A uniform field is one whose strength and direction are the same at all points.)
- It moves with a constant velocity since the force has a constant magnitude.
  - It moves with a constant acceleration since the force has a constant magnitude.
  - It moves in a circle at a constant speed since the force is always perpendicular to the velocity.
  - It accelerates in a circle since the force is always perpendicular to the velocity.
  - It remains at rest since the force and the initial velocity are zero.

22. An electron moves horizontally toward a screen. The electron moves along the path that is shown because of a magnetic force caused by a magnetic field. In what direction does that magnetic field point?

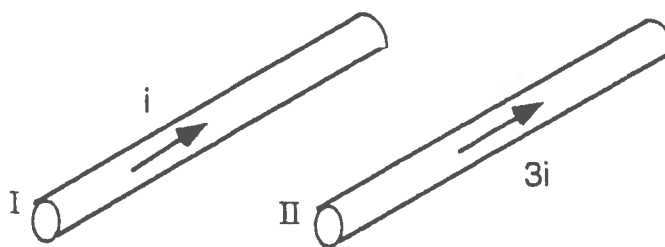
- Toward the top of the page
- Toward the bottom of the page
- Into the page
- Out of the page
- The magnetic field is in the direction of the curved path.



23. Wire 1 has a large current  $i$  flowing out of the page ( $\odot$ ), as shown in the diagram. Wire 2 has a large current  $i$  flowing into the page ( $\otimes$ ). In what direction does the magnetic field point at position P?



24. Two parallel wires I and II that are near each other carry currents  $i$  and  $3i$  both in the same direction. Compare the forces that the two wires exert on each other.



- (a) Wire I exerts a stronger force on wire II than II exerts on I.  
 (b) Wire II exerts a stronger force on wire I than I exerts on II.  
 (c) The wires exert equal magnitude attractive forces on each other.  
 (d) The wires exert equal magnitude repulsive forces on each other.  
 (e) The wires exert no forces on each other.
25. The figures below represent positively charged particles moving in the same uniform magnetic field. The field is directed from left to right. All of the particles have the same charge and the same speed  $v$ . Rank these situations according to the magnitudes of the force exerted by the field on the moving charge, from greatest to least.

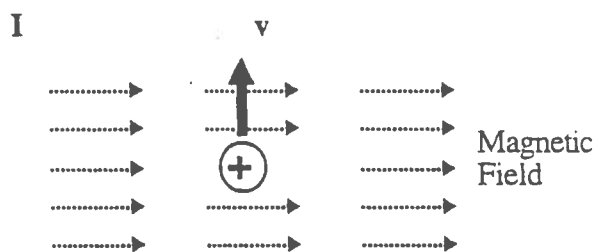
(a)  $I = II = III$

(b)  $III > I > II$

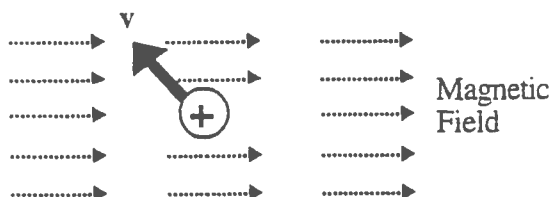
(c)  $II > I > III$

(d)  $I > II > III$

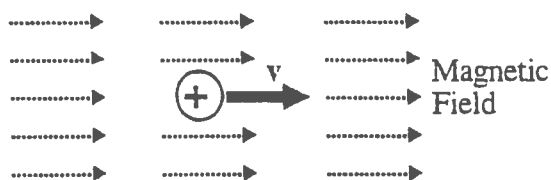
(e)  $III > II > I$



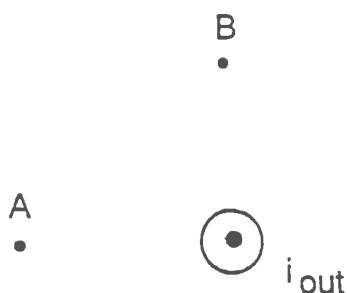
II



III

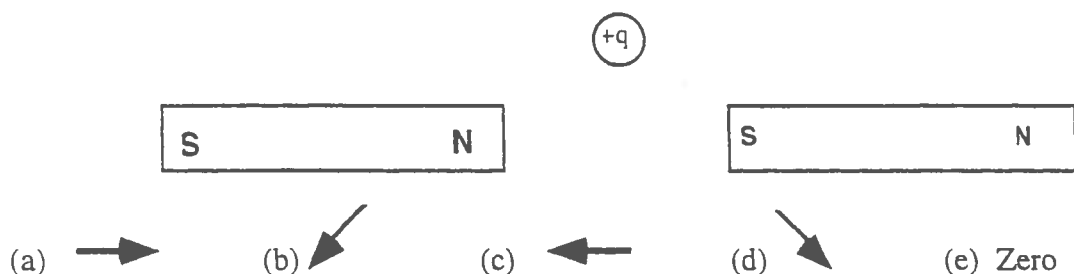


26. The diagram shows a wire with a large electric current  $i$  ( $\odot$ ) coming out of the paper. In what direction would the magnetic field be at positions A and B?

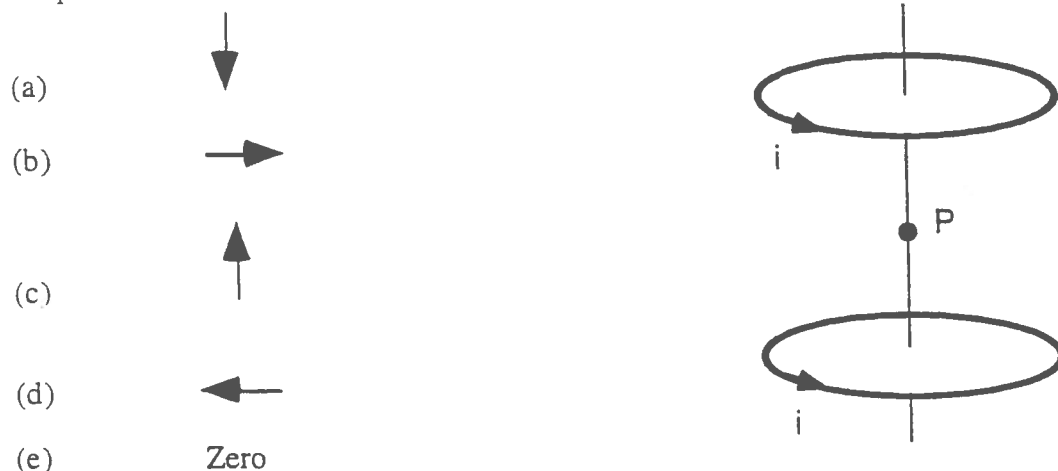


- (a)
- (b)
- (c)
- (d)
- (e) None of these

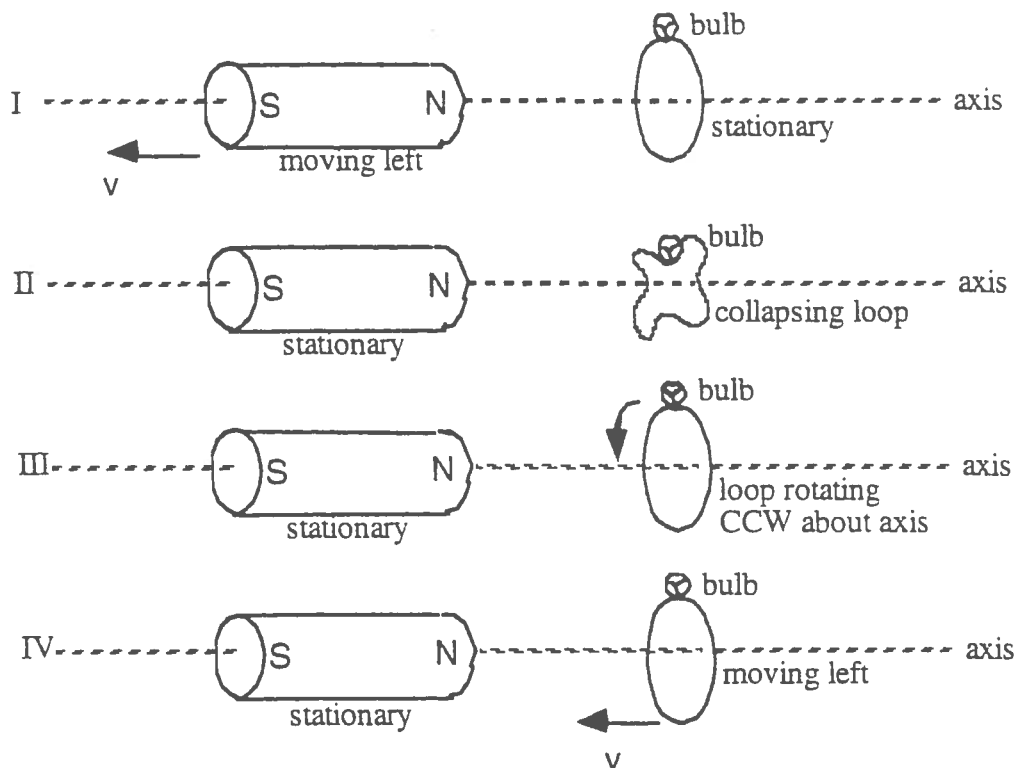
27. A positively-charged particle ( $+q$ ) is at rest in the plane between two fixed bar magnets, as shown. The magnet on the left is three times as strong as the magnet on the right. Which choice below best represents the resultant **MAGNETIC** force exerted by the magnets on the charge?



28. Two identical loops of wire carry identical currents  $i$ . The loops are located as shown in the diagram. Which arrow best represents the direction of the magnetic field at the point P midway between the loops?



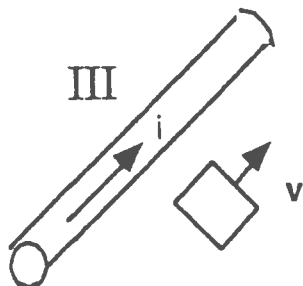
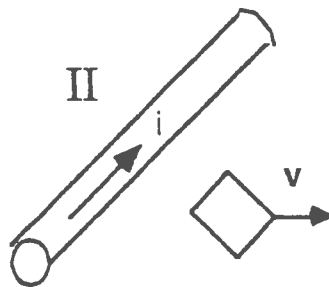
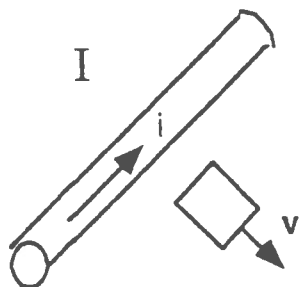
The five separate figures below involve a cylindrical magnet and a tiny light bulb connected to the ends of a loop of copper wire. These figures are to be used in the following question. The plane of the wire loop is perpendicular to the reference axis. The states of motion of the magnet and of the loop of wire are indicated in the diagram. Speed will be represented by  $v$  and CCW represents counter clockwise.



29. In which of the above figures will the light bulb be glowing?

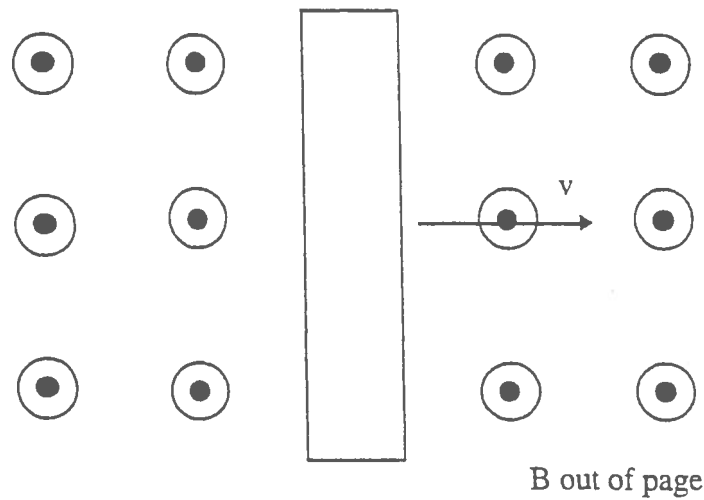
- (a) I, III, IV      (b) I, IV      (c) I, II, IV      (d) IV      (e) None of these

30. A very long straight wire carries a large steady current  $i$ . Rectangular metal loops, in the same plane as the wire, move with velocity  $v$  in the directions shown. Which loop will have an induced current?

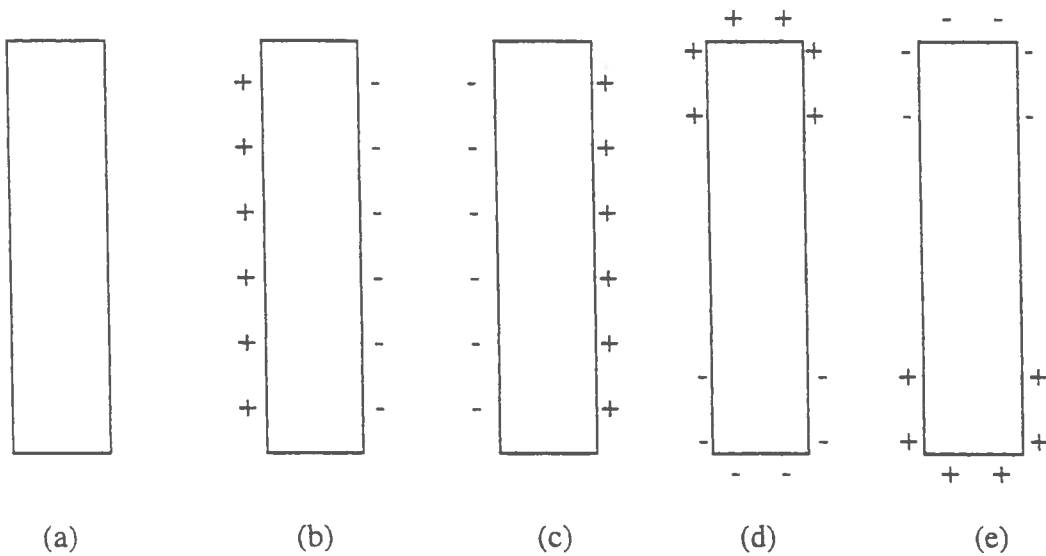


- (a) only I and II  
 (b) only I and III  
 (c) only II and III  
 (d) all of the above.  
 (e) none of the above.

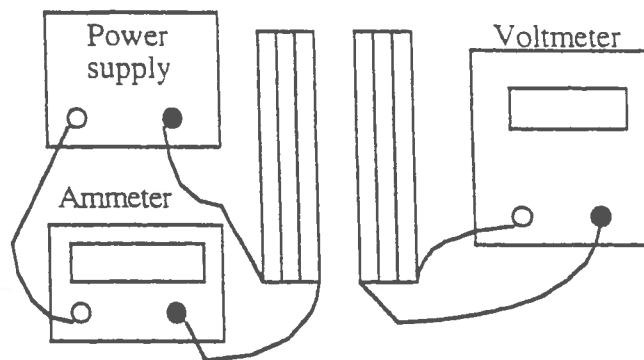
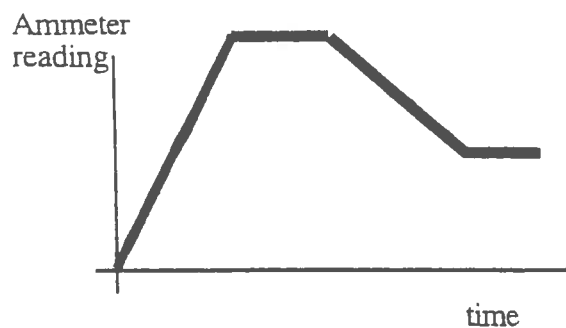
31. A neutral metal bar is moving at constant velocity  $v$  to the right through a region where there is a uniform magnetic field pointing out of the page. The magnetic field is produced by some large coils which are not shown on the diagram.



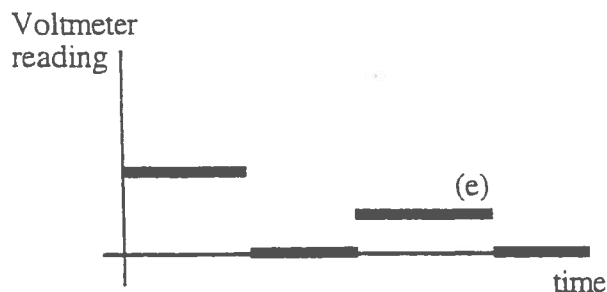
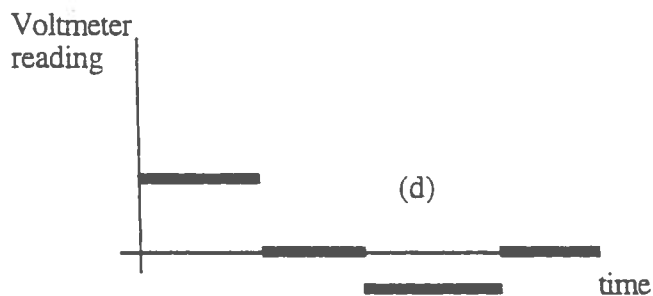
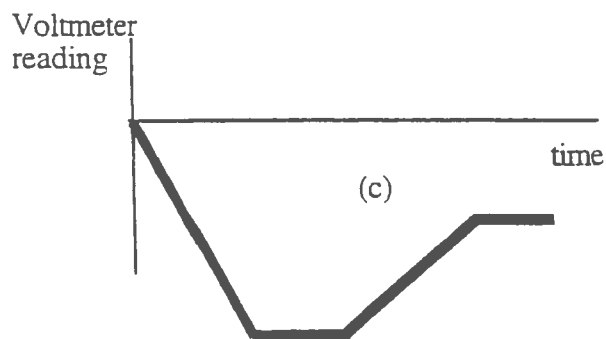
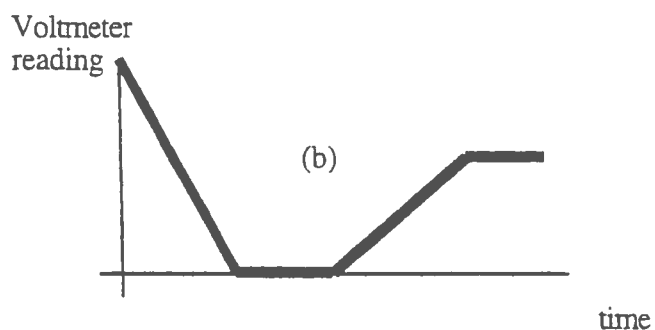
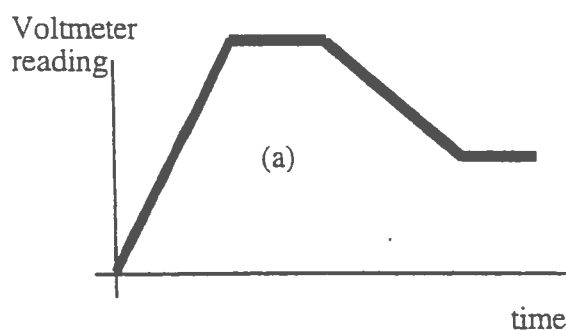
Which one of the following diagrams best describes the charge distribution on the surface of the metal bar?



32. A variable power supply is connected to a coil and an ammeter, and the time dependence of the ammeter reading is shown. A nearby coil is connected to a voltmeter.



Which of the following graphs correctly shows the time dependence of the voltmeter reading?



# Sample assessment for critical thinking, quantitative reasoning, and personal/social responsibility

## FOR 200

### Final Report – Sample Assessment

Throughout the field portion of the course, students will be working as a team to measure ecological characteristics of systems. Using the data that was collected, they will answer management questions about the various sites at which measurements were taken. Use the following outline as a guide for what is expected in the group report:

#### **Title Page:**

The title page should contain:

- a) Course Number and Name
- b) Semester and Date Submitted
- c) Team name
- d) Team Members and email addresses

#### **Introduction:**

This section should contain:

- a) General background about data collection (what you did, where you did it, and why you did it—this should be general, detailed descriptions should be written later in other sections)
- b) How this information is relevant to management, and why it is useful.

#### **Management Questions:**

You will need to identify 3 management questions that can be answered using the data you have collected. Make these questions answerable, and the answers data-driven. It should be obvious by the way you word your questions which data you will be using to answer your questions. Some data may become “off-limits” for questions (as it is data that is collected for real research projects)...you will become alerted to this during the course.

#### **Methods:**

This section should contain:

- a) Sources of field methods
- b) Overview of methods—assume the reader has some familiarity of the data collection methods
  - a. Plot description
  - b. Species composition
  - c. Tree data
  - d. Fuel load
  - e. Other field protocols
- c) Data handling and security
- d) Site descriptions (only describe the sites you will use to answer your management questions) including:
  - a. Geospatial site locations
  - b. Physical, geographic and geological characteristics of sites
  - c. Biotic characteristics of sites
  - d. Fuel load characteristics

**Data Analysis:**

Describe which data you used to answer your questions, and how you analyzed it. Did you use Excel? Another program? GIS? Calculations?

**Results:**

Present your results in a concise, useful way that allows the reader to infer the answers to your questions. Use tables, graphs, pictures, maps. Etc.

**Discussion/Interpretation:**

Here is where you answer your questions! Explain how your results provide an explanation or answer to your questions. Step through all three questions, and remind the reader what your questions were, and state clearly what your answers are.

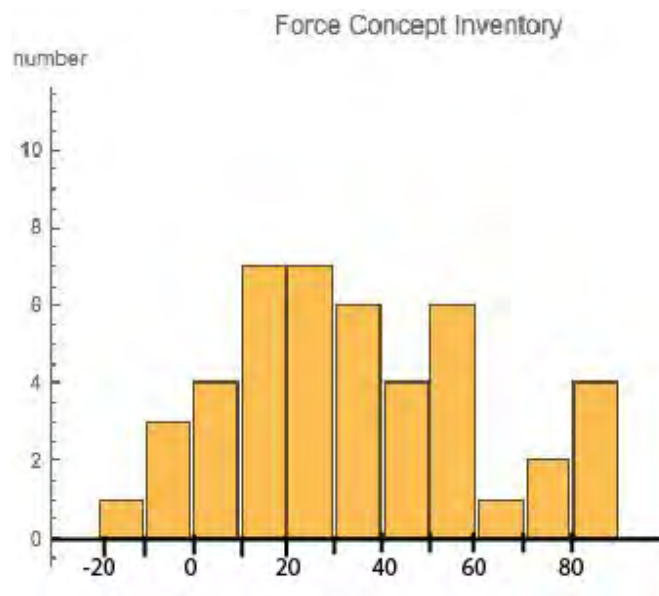
Explain **why** your answers are important to “managers” and how your information could be used to make decisions about land management or policy, or other important management implications.

The final assignment will be graded according to the rubric:

Grammar	10%
Organization	30%
Following instructions	10%
Accuracy and appropriateness of presentation	20%
Depth of understanding	30%



## Assessment of typical SLO



## Rubric for Critical Thinking

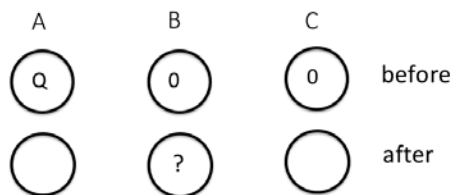
Number of students assessed =

Enter the number of students that fall into each category.

Essential Skill: Critical Thinking	Unacceptable	Acceptable	Target
All component skills	Gain < 0.3	$0.3 \leq \text{Gain} \leq 0.6$	$0.6 < \text{Gain}$

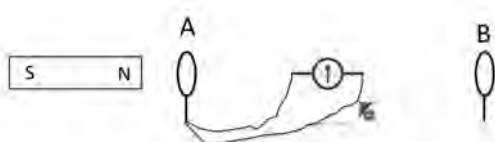
# SAMPLE ASSESSMENTS FOR CRITICAL THINKING

You have three identical conducting spheres: A, B, and C. Sphere A starts with a charge of  $Q$  while B and C start with no net charge. A and B are touched and separated. Then B and C are touched and separated. How much charge is now on sphere B?



- A)  $Q$       B)  $-Q/2$       C)  $Q/2$       D)  $Q/4$       E)  $0$

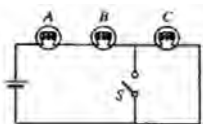
When the metal loop is transported instantly from position A to position B (far away from the magnet), the galvanometer needle is momentarily deflected by  $+1$ . If the loop is transported instantly from B to A, the needle is momentarily deflected by



- A)  $+1$       B)  $0$       C)  $-1$

Kim takes a metal ruler and a wooden ruler from his pencil case. He announces that the metal one feels colder than the wooden one. These explanations are given by classmates. Whose explanation is best?

- A) Alice says: "Metal conducts heat away from his hand more rapidly than wood."  
 B) Bob says: "Wood is a naturally warmer substance than metal."  
 C) Carol says: "The wooden ruler contains more heat than the metal ruler."  
 D) Dora says: "Metals are better radiators than wood."  
 E) Ernest says: "Cold flows more readily from a metal."



When the switch is closed, what happens to the bulbs?

- A) A and B become brighter, C is extinguished  
 B) A and B become dimmer, C gets brighter  
 C) A and B are unchanged, C is extinguished  
 D) A and B and C are unchanged.  
 E) A is unchanged, B and C become dimmer.

## TERM PAPER GUIDELINES, PHIL 2220

This term paper gives you a great opportunity to investigate a topic that interests you within the topic of Ancient Philosophy, as we've circumscribed it. I leave the topic selection very open so that you can satisfy your own curiosity. The main constraint is that you should choose a philosopher or philosophical topic that corresponds to the period we're covering; you'll have the opportunity to submit your topic for approval (see below).

To further stimulate your search for an interesting topic, you may find it helpful to browse the *Stanford Encyclopedia of Philosophy* for virtually any relevant philosophical figure or issue in the ancient period. You can also click on the "related links" section at the bottom of any *Stanford* entry you happen to be looking at—a very helpful way to expand your search. You could start, e.g., by going to the search bar and typing in "Presocratic Philosophy," "Socrates," etc.

<https://plato.stanford.edu>

We said in our discussion that you can think of possible topics as dividing into three categories:

- I. A philosopher from the time period, for example:
  - Parmenides, Socrates, Aristotle, etc.
- II. A philosopher on a specific topic, for example:
  - Socrates on virtue (in some specified Platonic dialogue or dialogues)
  - Plato's argument for the Forms
  - Aristotle on "prime matter," etc.
- III. A theory or issue from the time period, for example:
  - Presocratic views about the *archê* (the "first principle" of everything)
  - Skepticism in the Classical period
  - Theories of love

As we discussed, you should submit a proposed topic by the end of \_\_\_\_\_. I have you submit this so I can (a) greenlight your topic but also (b) make helpful suggestions about related articles. Speaking of which, here are the main guidelines for the paper:

In the process, it's a requirement that you identify for use:

1. at least one primary text (i.e., written by a thinker from the period), and
2. at least two appropriate secondary scholarly texts.

The paper should be around 5 pages, double-spaced in 12-point font with standard margins, and it should follow a recognized formatting approach. Your paper should also include at the very least:

3. An introduction
4. Reporting on the details of the topic you're addressing
5. Reference to the scholarly articles and the viewpoints of others
6. Discussion and clarification of the philosophical issue(s)
7. Your analysis and philosophical conclusions about the topic.
8. At least one (but more if you like) key argument in which you support your conclusion (or conclusions).

We'll discuss these point in more detail in person including, importantly, how to find and identify legitimate scholarly sources. Let me know if you encounter any difficulty deciding on a topic, because I can also make suggestions. Email or message me with any questions moving forward.

## Observing the Sun's Position and Motion

PH114A Lab

**Big Idea:** Sky objects have properties, locations, and predictable patterns of movements that can be observed and described. Those motions explain such phenomena as the day, the year, the seasons, phases of the moon, and eclipses.

**Goal:** Students will conduct a series of inquiries about the motion of the Sun in the sky using prescribed Internet simulations and learn how the Sun follows different pathways at different times of the year.

### **Computer Setup:**

Access <http://www.heavens-above.com/> and

- a) Find *Configuration* → *Change your observing location*, and set your observing location and time zone.
- b) Find [Interactive sky chart \(now with PDF print option\)](#) link under *Astronomy*, and click the link. You should have the current sky chart from your observing location.

### **Phase I: Exploration PART A:**

- 1) On a map of the United States, north is toward the top of the page and west is to the left. On all of the star charts, north is toward the top of the page and west is to the right. How do you account for this difference?
- 2) This is the current sky. Find the YELLOW dot marking the current location of the SUN. Which constellation is it closest to right now?
- 3) Change the time by increasing it one hour and pressing submit. Exactly how has the Sun's position change on the map? You will find the box the change the time at the top of the chart.
- 4) Slowly increase the time to later and later in the day. This system probably uses 24-hr "military time" or "Zulu" time. So, 6pm is actually entered as 18-hours. Determine EXACTLY what time, hours and minutes, that the Sun will set tonight.

Sunset: \_\_\_\_\_

- 5) Which constellation was the Sun closest to when it set?
- 6) Is this the same or different than where the Sun was earlier in the day?
- 7) What generalization can you make about the relative speeds that the Sun and the stars move through the sky over the course of a day?
- 8) What generalization can you make about the direction the Sun and the stars move through the sky over the course of a day?
- 9) Describe precisely how you would test to see if this generalization is true during the night time too.
- 10) What is the physical cause of your generalization?

**Phase I: Exploration PART B:**

**When looking at the star map set for SUNSET TONIGHT:**

- 11) on what part of the map (left, right, top, bottom or center) is the star group that appears highest in the night sky? What is the name of this star group?
- 12) on what part of the map (left, right, top, bottom or center) is the star group that appears near the southern horizon? What is the name of this star group?
- 13) on what part of the map (left, right, top, bottom or center) is the star group that appears near the eastern horizon? What is the name of this star group?

**When looking at the star map set for THREE HOURS after tonight's sunset:**

- 14) on what part of the map (left, right, top, bottom or center) is the star group that now appears highest in the night sky? What is the name of this star group?

- 15) Where did the stars that used to be at this position move to?
- 16) on what part of the map (left, right, top, bottom or center) is the star group that now appears near the southern horizon? What is the name of this star group?
- 17) Where did the stars that used to be at this position move to?
- 18) on what part of the map (left, right, top, bottom or center) is the star group that now appears near the western horizon, where the Sun sets? What is the name of this star group?
- 19) Where did the stars that used to be at this position move to?
- 20) on what part of the map (left, right, top, bottom or center) is the star group that now appears near the eastern horizon, where the Sun rises? What is the name of this star group?
- 21) Where did the stars that used to be at this position move to?
- 22) If you were to change the time to midnight, predict what would be different about the positions of the stars.
- 23) What generalization can you make about how the stars change position over the course of the night?

## **Phase II – Does the Evidence Match the Conclusion?**

- 24) From before, precisely what time (hours and minutes) will the sun set below the western horizon tonight? Also record the azimuth angle from the chart. This is in the grey outer edge.
- 25) Using the sky chart, precisely what time the sun will set one month from now? Also record the azimuth angle from the chart. This is in the grey outer edge.
- 26) Using the sky chart, precisely what time the sun will set two months from now? Also record the azimuth angle from the chart. This is in the grey outer edge.
- 27) Using the sky chart, precisely what time the sun will set three months from now? Also record the azimuth angle from the chart.
- 28) Using the sky chart, precisely what time the sun will set four months from now? Also record the azimuth angle from the chart.
- 29) Using the sky chart, precisely what time the sun will set five months from now? Also record the azimuth angle from the chart.
- 30) Using the sky chart, precisely what time the sun will set six months from now? Also record the azimuth angle from the chart.
- 31) Using the sky chart, precisely what time the sun will set seven months from now? Also record the azimuth angle from the chart.
- 32) Using the sky chart, precisely what time the sun will set eight months from now? Also record the azimuth angle from the chart.
- 33) Using the sky chart, precisely what time the sun will set nine months from now? Also record the azimuth angle from the chart.

34) Using the sky chart, precisely what time the sun will set ten months from now? Also record the azimuth angle from the chart.

35) Using the sky chart, precisely what time the sun will set eleven months from now? Also record the azimuth angle from the chart.

36) Using the sky chart, precisely what time the sun will set twelve months from now? Also record the azimuth angle from the chart.

37) Record your above data in the table below: For Direction, use West, West-Southwest, Southwest, West-Northwest, or Northwest.

Date	Sunset Time	Azimuth (west = 270°)	Direction
Today's Date			
1 Month			
2 Months			
3 Months			
4 Months			
5 Months			
6 Months			
7 Months			
8 Months			
9 Months			
10 Months			
11 Months			
12 Months			



- 38) If a student proposed a generalization that “sunset time changes every month, setting earlier and earlier in the fall to winter, and then setting later and later in the spring to summer,” would you agree, disagree with the generalization based on the evidence you collected? *Explain your reasoning and provide evidence either from the above questions and table, or from evidence you yourself generate using the star map program.*

### **Phase III – What Conclusions Can You Draw From the Evidence?**

Most of us would agree that the sun sets in the general direction of west. What conclusions and generalizations can you make from the data you collected in your data table, in terms of how the DIRECTION THE SUN SET CHANGES? *Explain your reasoning and provide evidence to support your reasoning.*

39) Evidence-based Conclusion:

### **Phase IV – What Evidence Do You Need?**

Imagine you have been assigned the task of writing a news brief for your favorite news blog about how the noon-time sun's position, altitude, or distance above southern horizon changes over the course of the semester. Describe precisely what evidence you would need to collect in order to answer the research question of, "**How does the noon-time sun's position above the southern horizon change over the semester?**"

40) *Create a detailed, step-by-step description of evidence that needs to be collected and a complete explanation of how this could be done—not just "measure the position of the Sun," but exactly what would someone need to do, step-by-step, to accomplish this.*

## **Phase V – Summary**

**PRINT YOUR NAME** \_\_\_\_\_

- 41) Create a 50-word summary, in your own words, that describes how the sun's motion and position changes over the day and over the year. Feel free to create and label sketches to illustrate your response.

### Experiment Submission:

- 1) Type up a Word document that contains the title, "PH114AL Experiment 4", and your name and answers of this experiment.
- 2) Submit this experiment using the procedure outlined in the course introduction.

Save Experiment 4 as a Word document titled with your name and the words "Experiment 4" (e.g. Mike's Experiment 4) and upload the document to the assignment link.

Source: File Retrieved from the following site in Jan. 11, 2018 and modified.

[http://r.search.yahoo.com/\\_ylt=A2KLfSBJ2FdaIi4ASCVXNyoA;\\_ylu=X3oDMTByZnU4cmNpBGNvbG8DYmYxBHBvcwM5BHZ0aWQDBHNIYwNzcg--/RV=2/RE=1515735241/RO=10/RU=http%3a%2f%2fphysics.uwyo.edu%2f%257Eganguly%2fASTRO1050%2fLabs%2fObserving\\_Sky\\_With\\_WWT-v2.doc/RK=2/RS=XPI5hiUacnxmnbdQatUWDFkJjnM-](http://r.search.yahoo.com/_ylt=A2KLfSBJ2FdaIi4ASCVXNyoA;_ylu=X3oDMTByZnU4cmNpBGNvbG8DYmYxBHBvcwM5BHZ0aWQDBHNIYwNzcg--/RV=2/RE=1515735241/RO=10/RU=http%3a%2f%2fphysics.uwyo.edu%2f%257Eganguly%2fASTRO1050%2fLabs%2fObserving_Sky_With_WWT-v2.doc/RK=2/RS=XPI5hiUacnxmnbdQatUWDFkJjnM-)

**Multiple choice:** (12 questions, 3 points each). **Circle only one letter per answer!**

1. Which of the following statements is TRUE?

- A All eukaryotes are multicellular organisms
- B All animals and fungi burn oxygen and release CO<sub>2</sub>
- C All plant cells are prokaryotic cells
- D All eukaryotes conduct photosynthesis

2. Why aren't VIRUSES considered to be true organisms?

- A They do not have any protein or DNA
- B They have no metabolism and cannot reproduce alone
- C They do not evolve like other organisms do
- D They have no muscle or nervous systems

3. Which of the following types of organisms is an AUTOTROPH?

- A animals
- B plants
- C fungi
- D archaea

4. Which of the following statements is FALSE?

- A All organisms need nitrogen to form nucleic acids and proteins
- B Bacteria can "fix" nitrogen gas into ammonia and nitrate
- C Animals receive the fixed nitrogen they need through the air they breathe
- D Bacterial decomposition can return nitrogenous compounds to the environment

5. Why is sickle-cell anemia more common in people of African ancestry?

- A There are more mosquitoes in Africa that can spread sickle-cell anemia
- B There is risk of malaria in Africa, but the sickle-cell allele offers some protection
- C The malaria parasite is more successful in Africans with sickle-cell anemia
- D African mosquitoes do not bite people who have sickle-cell anemia

6. What kinds of algae can live in the deepest water?

- A. Red algae, because they are best at absorbing red wavelengths of light
- B. Blue algae, because they are best at absorbing blue wavelengths of light
- C. Green algae, which have the most chloroplasts for photosynthesis
- D. Red algae, which absorb long wavelengths of light that penetrate deep water

7. Which of the following is true about FLOWERING PLANTS?

- A this group contains the bryophytes and ferns
- B the gametophyte generation is about the same size as the sporophyte
- C this group utilizes pollen and fruits for reproduction
- D this group contains the lycopods and horsetails

8. Which statement accurately explains how FUNGI differ from PLANTS?

- A Fungi produce spores; plants do not
- B Plants conduct photosynthesis; fungi do not
- C Plants depend on water; fungi do not
- D Plants are eukaryotes; fungi are not

9. What happens when you dissolve yeast in warm water and add a little sugar?

- A The yeast begins photosynthesis and releases bubbles of carbon dioxide
- B The yeast and sugar have a chemical reaction, like baking soda with vinegar
- C The yeast consumes the sugar and releases bubbles of carbon dioxide
- D The yeast begins photosynthesis and releases bubbles of free oxygen

10. Which of the following is NOT a characteristic of all animals?

- A All animals have complex organs, muscles, and a nervous system
- B All animals are multicellular eukaryotes
- C All animals can be traced back through time to the Cambrian period
- D All animals can move or swim during at least one stage of their lifetimes

11. Which of the following statements is FALSE?

- A. Sponges are multicellular animals that have no tissues or body symmetry
- B. Humans and sharks both belong to the phylum Chordata
- C. Cnidaria have radial symmetry and specialized stinging cells
- D. All worms (flatworms, segmented worms, roundworms) are in the same phylum

12. From this list, which of the following animal phyla is LEAST diverse (# of species)?

- A. Mollusks
- B. Chordates
- C. Arthropods
- D. Nematodes

13. Please list 3 human diseases that are caused by bacteria (3 points)

14. Please list 3 human diseases that are caused by viruses (3 points)

15. Please list 3 ways that bacteria benefit eukaryotic organisms (3 points)

VIRUS	LYTIC VIRUS	RETROVIRUS	PROKARYOTE
EUKARYOTE	NUCLEUS	ORGANELLES	BACTERIA
CYTOPLASM	RIBOSOMES	CHLOROPLASTS	MITOCHONDRIA
PROKARYOTE	EUKARYOTE	HETEROTROPH	AUTOTROPH
ENDOSYMBIOSIS	FUNGI	ZYGOMYCOTA	ASCOMYCOTA
BASIDIOMYCOTA	HYPHAE	MYCELIUM	SPOROCARP
MULTICELLULAR	ANIMAL	BLASTULA	GASTRULA
BILATERAL SYMMETRY		RADIAL SYMMETRY	CHORDATES
PORIFERA	CNIDARIA	PLATYHELMINTES	ANNELIDS
MOLLUSKS	NEMATODES	ARTHROPODS	ECHINODERMS
PRIMATES	EXTINCTION	CHLOROPHYLL	PHOTOSYNTHESIS
ALGAE	SPOROPHYTE	GAMETOPHYTE	ALTERNATION OF GENERATION
BRYOPHYTES	VASCULAR PLANTS	LYCOPODS	HORSETAILS
FERNS	SEED PLANTS	CONIFERS	CONES
POLLEN	ANGIOSPERMS	FLOWER	FRUIT
XYLEM	PHLOEM	STOMATA	GUARD CELLS
LEAVES	SHOOTS	ROOTS	VASCULAR TISSUE

**VOCABULARY: 3 POINTS EACH**

16. This is the type of plant vascular tissue that transports water from the roots up the plant's body and toward its leaves:

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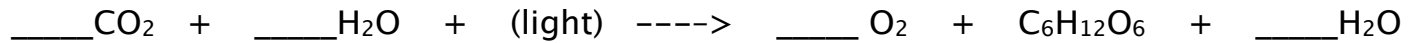
17. This is the fluffy, spreading, often white-colored mass that forms the somatic (growing) phase of fungi:

---

18. These plant organelles, which contain special pigments involved in photosynthesis, are believed to be the descendants of endosymbiotic photosynthetic bacteria:  
\_\_\_\_\_
19. Plants have this type of reproductive cycle, in which haploid plants that produce gametes will give rise to diploid offspring that produce spores: \_\_\_\_\_
20. In the presence of water, carbon dioxide ( $\text{CO}_2$ ) can react with energy from sunlight to form glucose sugar ( $\text{C}_6\text{H}_{12}\text{O}_6$ ). What is this chemical reaction called? \_\_\_\_\_
21. In animals, this word describes a body structure in which there are two halves that form mirror images across a central body axis: \_\_\_\_\_
22. This is a mature, ripened, fertilized ovule of a flowering plant, containing the seeds:  
\_\_\_\_\_
23. In seed plants, these tiny structures carry the male gametes: \_\_\_\_\_
24. This infectious agent contains nucleic acid and protein, but requires a host cell and cannot reproduce on its own: \_\_\_\_\_
25. In these small, primitive plants that must live near water, the dominant, larger, green generation is the gametophyte. \_\_\_\_\_
26. This general term describes a diploid eukaryote that is multicellular, can move at some point during its life, is a heterotroph, and begins development as a blastula:  
\_\_\_\_\_
27. In conifers, these structures contain the male and female gametophytes: \_\_\_\_\_



**28. Balance the following chemical reaction by inserting the correct numbers into the four blank spaces (4 points)**



**29. (6 points) Use the following 6 words to fill in the blanks below:**

haploid, spores, gametophyte, diploid, gametes, sporophyte

In alternation of generation, the plant that has 1 copy of each gene and chromosome is \_\_\_\_\_, and is called the \_\_\_\_\_. It produces the \_\_\_\_\_ that help form the next generation.

The plant that has 2 copies of each gene and chromosome is \_\_\_\_\_, and is called the \_\_\_\_\_. It produces the \_\_\_\_\_ that help form the next generation.

**30. From the list of animal phyla given here, place the correct one in each blank below (1 point each, 9 points total)**

NEMATODA	PLATYHELMINTHES	ANNELIDA
CNIDARIA	ECHINODERMATA	ARTHROPODA
MOLLUSCA	CHORDATA	PORIFERA

\_\_\_\_\_  
These are sessile animals without any organs. Amazingly, you can break one up into very tiny pieces, and they can find one another, reassemble, and continue living as a whole organism

\_\_\_\_\_  
Animals of this phylum have radial symmetry, a polyp and a medusa, and specialized stinging cells called nematocysts

---

These are “flatworms”: many are parasitic, and they have a simple nervous system

---

These “spiny-skinned” animals have a 5-sided symmetry that appears to be radial, live only in ocean environments, and like humans, the mouth is NOT formed by the first opening created during gastrulation

---

These are “roundworms”: one of the most diverse groups of animals. Many are parasitic, many live in the soil, and they are not segmented

---

Animals of this phylum always have a nervous system along the back, a dorsal rod-like structure along the back for support, a tail, and gill slits in the region of the throat

---

The most intelligent animals without backbones, belong to this phylum. They have tentacles, very well-developed eyes, and very good vision. Other members of this phylum are protected by hard shells.

---

These are the “segmented worms”: including the common earthworm, as well as leeches (blood-sucking parasites)

---

This is the most species-diverse phylum of animals on Earth!

**BONUS QUESTIONS – 20 POINTS AVAILABLE ON MATERIAL FROM THE 2<sup>nd</sup> EXAM**

1. This is the evolutionary process that Darwin described, in which heritable traits become more common in a population if they contribute toward reproductive success (2)
  
2. This word means: similarity that is observed among the traits of different organisms, as a result of shared ancestry / descent from an ancestor that also had that trait: (1)
  
3. This word means the shared ancestry of organisms – or a branching, tree-like diagram that illustrates such a history: (1)
  
4. Which of the following statements is FALSE? (1)
  - A. Life has existed on Earth for more than 3 billion years
  - B. During most of Earth's history, the only kind of life was single-celled eukaryotes
  - C. Early Earth had no free oxygen
  - D. Early Earth had no atmosphere
  
5. Which of the following populations is in Hardy-Weinberg equilibrium? (1)

A.	0.33 AA,	0.34 Aa,	0.33 aa
B.	0.16 AA,	0.48 Aa	0.36 aa
C.	0.25 AA,	0.25 Aa,	0.50 aa
D.	0.81 AA,	0.01 Aa,	0.18 aa
  
6. Why are large flightless birds – such as ostriches, emus, rheas, cassowaries, and kiwis – only found in southern hemisphere places like South America, Africa, Australia, & New Zealand? (3)
  
7. What is the main idea behind the Hardy-Weinberg principle? (3)
  
8. Why do birds and bats have wings with the same bones, but different wing structures? (3).
  
9. Why do mitochondria and chloroplasts have their own DNA? Explain! (3)
  
10. Draw a 3-branch phylogeny showing the evolutionary relationships between archaea, eukaryotes, and bacteria (2)

# SURFACE WEATHER MAPS

## Objectives

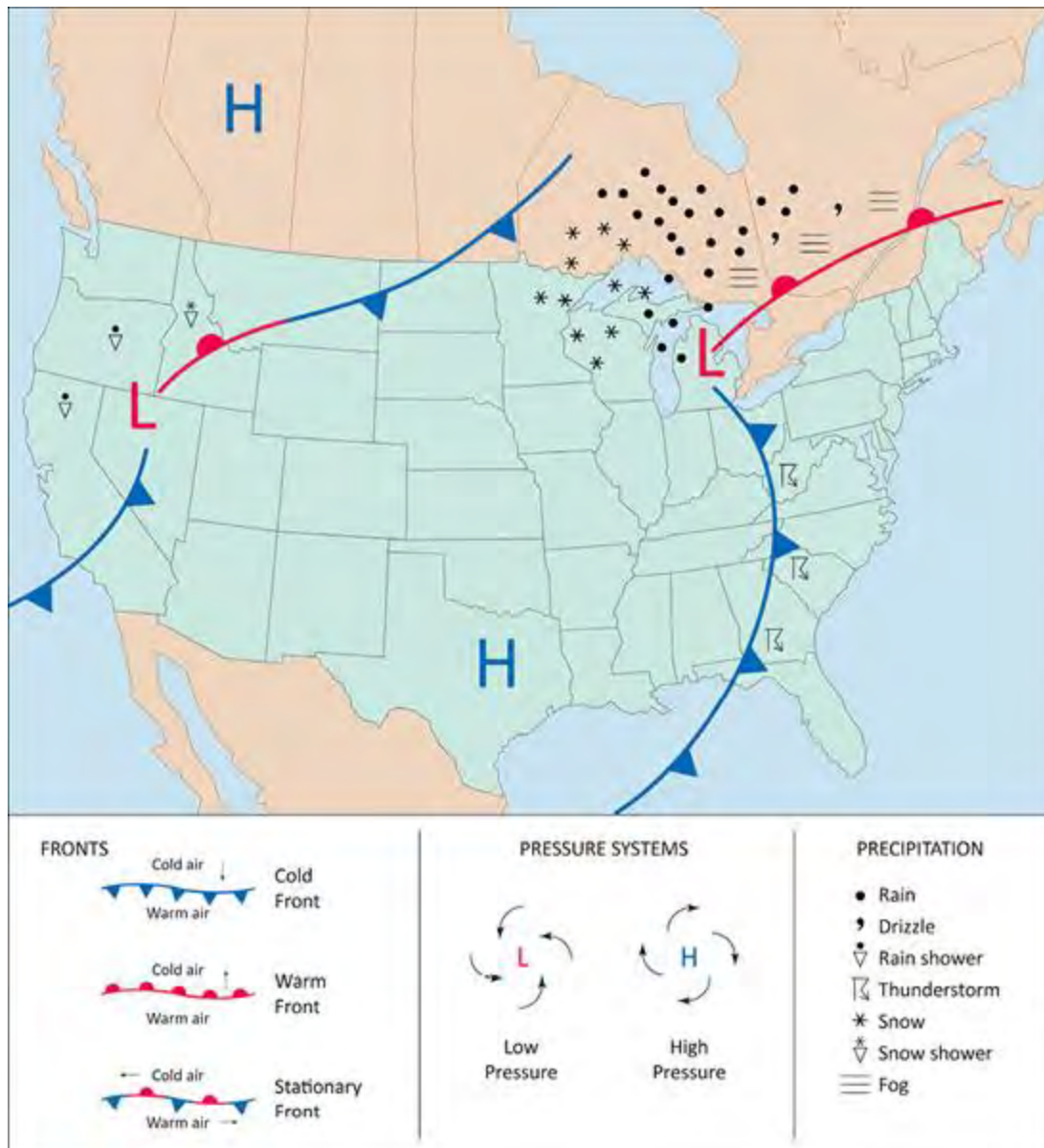
Weather is the state of the atmosphere at a particular time and place, mainly with respect to its impact upon life and human activity. Weather is defined by various elements including air temperature, humidity, cloudiness, precipitation, air pressure, and wind speed and direction. The surface weather map is a useful tool for depicting weather conditions over broad areas.

After completing this investigation, you should be able to:

- Decode the symbols commonly appearing on a surface weather map and describe weather conditions at various locations.
- Identify fronts appearing on the map, the weather likely to be occurring on either side of a front, and the motion of fronts.
- Describe general relationships between wind patterns and the high and low air pressure centers shown on weather maps.

## Introduction

- 1.Examine the surface weather map presented in **Figure 1** of this investigation. The weather map symbols shown are those typically seen on the Internet, television, and in newspapers. The H's and L's identify centers of relatively high or low air pressure compared to their surroundings. Moving outward horizontally in any direction from the blue H positioned in Texas, air pressure would \_\_\_\_\_.
- 2.Moving outward horizontally in any direction from the red L located in Lower Michigan, air pressure would \_\_\_\_\_.



**Figure 1.** Idealized surface weather map showing some common map symbols.

3. The thick curved lines with triangles (spikes) and/or semi-circles on the map are air mass boundaries. In the atmosphere, broad expanses of air with generally horizontally uniform temperature, humidity, and therefore density come in contact with other masses of air having different temperature, humidity, and density characteristics. Because air masses of different densities do not readily mix, boundaries separating air masses tend to remain distinct and persistent. These boundaries, called **fronts**, typically separate warm and cold air—the major determiner of air density differences. The leading edge of advancing cold air is a **cold front**

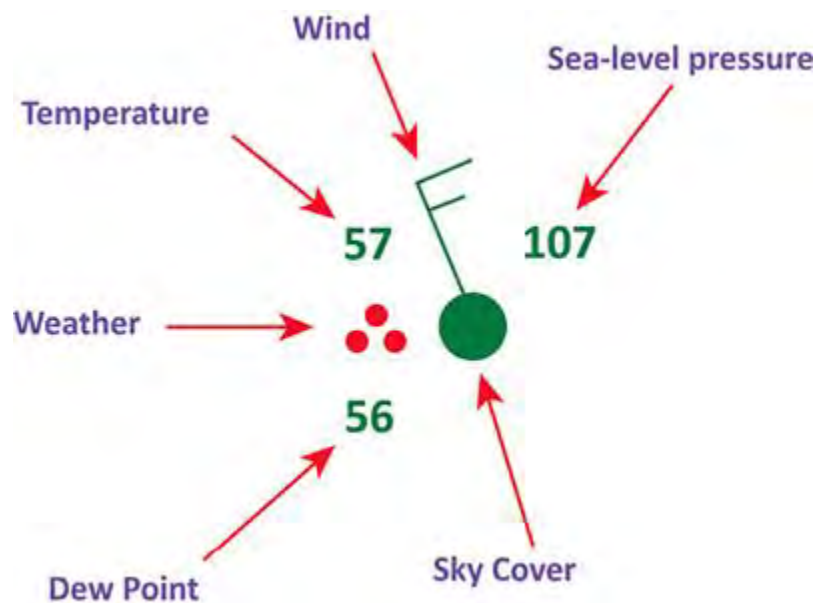
and, as shown in the map legend in Figure 1, is signified by blue spike symbols which are pointing in the direction toward which the cold front (and its air mass) is moving. The leading edge of advancing warm air is a **warm front** and is signified by red semi-circles on the side of the front's movement. The front plotted in the Southeastern U.S. is a \_\_\_\_\_ front.

4. According to the map, persons living in South Carolina can expect \_\_\_\_\_ weather after the front passes.

5. Precipitation is often depicted on weather maps by a variety of symbols as shown in Figure 1 including stars or asterisks (\*) to represent \_\_\_\_\_.

6. Two or three, whole or broken, horizontal lines symbolize \_\_\_\_\_.

Some weather maps display weather conditions at individual weather stations by the use of a station model. **Figure 2** shows the position of weather elements frequently reported in station models.



**Figure 2.** Surface weather map station model. [Adapted from NOAA]

**Temperature:** measured by a thermometer, corresponds to the heat energy of the air. In U.S. practice, surface temperatures are given in degrees Fahrenheit. Example above: 57°F.

**Wind:** speed measured by an anemometer, movement of air in nautical miles per hour (knots, kt) or land (statute) miles per hour. Long feather represents 10 kt, short feather represents 5 kt.

Direction is determined by a wind vane as to where the air is coming from relative to true north. Example above: 15 kt from north-northwest. (North is assumed to be toward the top of the map.)

**Sea-level pressure:** force of air per unit area due to its weight corrected to equivalent sea level altitude of station. Measured by a barometer in millibars (hectopascals) and plotted in coded form with leading 9 or 10 missing as well as decimal point to show tenths. Typical sea-level air pressures range from 950 to 1049 mb. Example above: **10**10.7 mb.

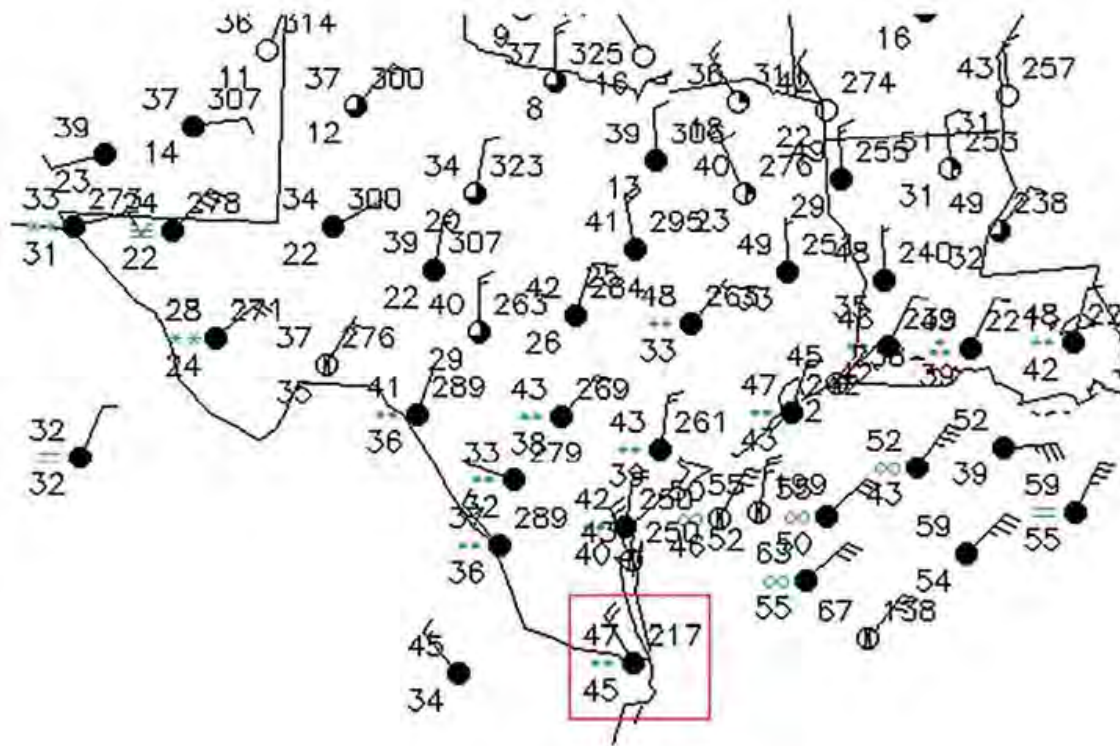
**Sky cover:** fraction of total sky area covered by clouds of any level. Measured by a ceilometer. Example above: 100%, termed overcast.

**Dewpoint:** measure of the water vapor content of the air. Specifically, the temperature (°F) to which the air at constant air pressure must be cooled to become saturated (begin condensation). Greater values of dewpoint mean greater amounts of water vapor per unit volume of the air. This is one of several measures of atmospheric humidity that may be used. It is preferred in meteorology due to its direct relation to vapor content. Example above: 56°F. The small difference between the temperature and the dewpoint indicates the air is near saturation and has a high *relative humidity*. This relation frequently accompanies precipitation or foretells formation of fog.

**Weather:** a symbol for current observed weather conditions, especially those which may affect extent of horizontal visibility and hamper aircraft operations. Example above: moderate rain.

For a more complete listing of weather symbols related to the station model, go to the *RealTime Weather Portal* and under Extras, click on “Surface Station Model.”

Refer to the “Surface Station Model” and related explanations of map symbols to interpret the plotted weather data reported in the red box on the weather map in **Figure 3**. The station is Brownsville, Texas.



**Figure 3.** Station models of surface weather conditions.

7. Temperature: \_\_\_\_\_ °F.

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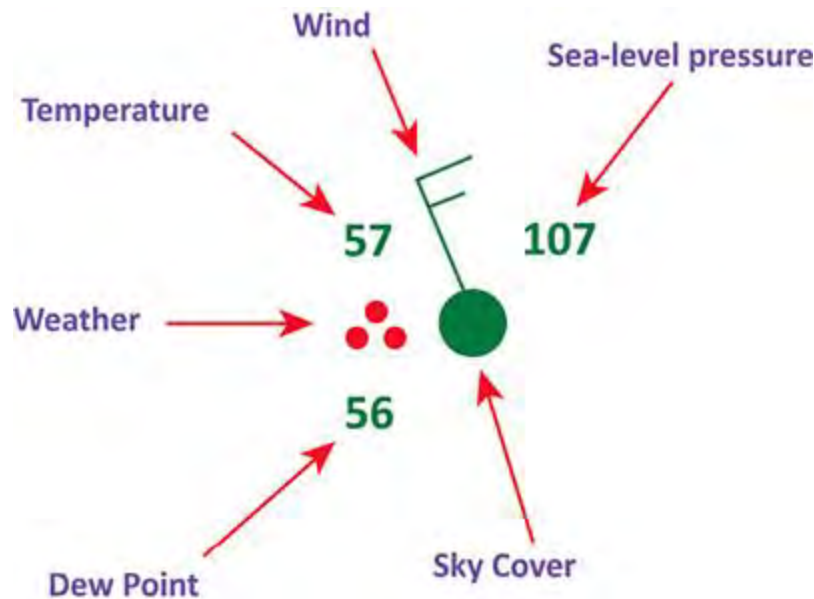
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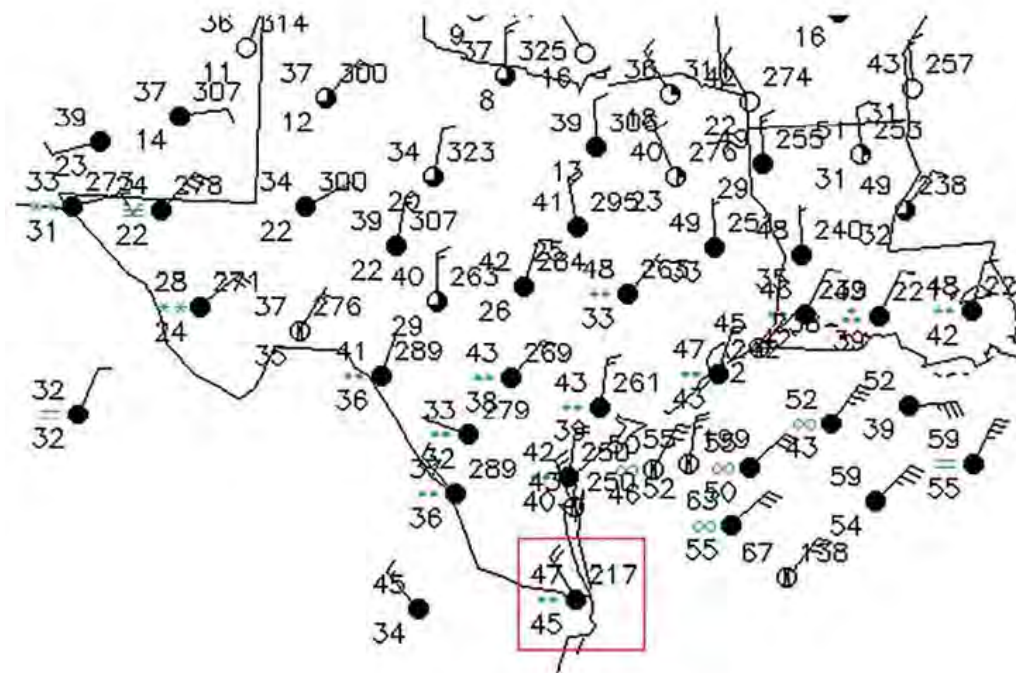
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**Figure 3.** Station models of surface weather conditions.

7. Temperature: \_\_\_\_\_ °F.

8. Dewpoint: \_\_\_\_\_ °F.

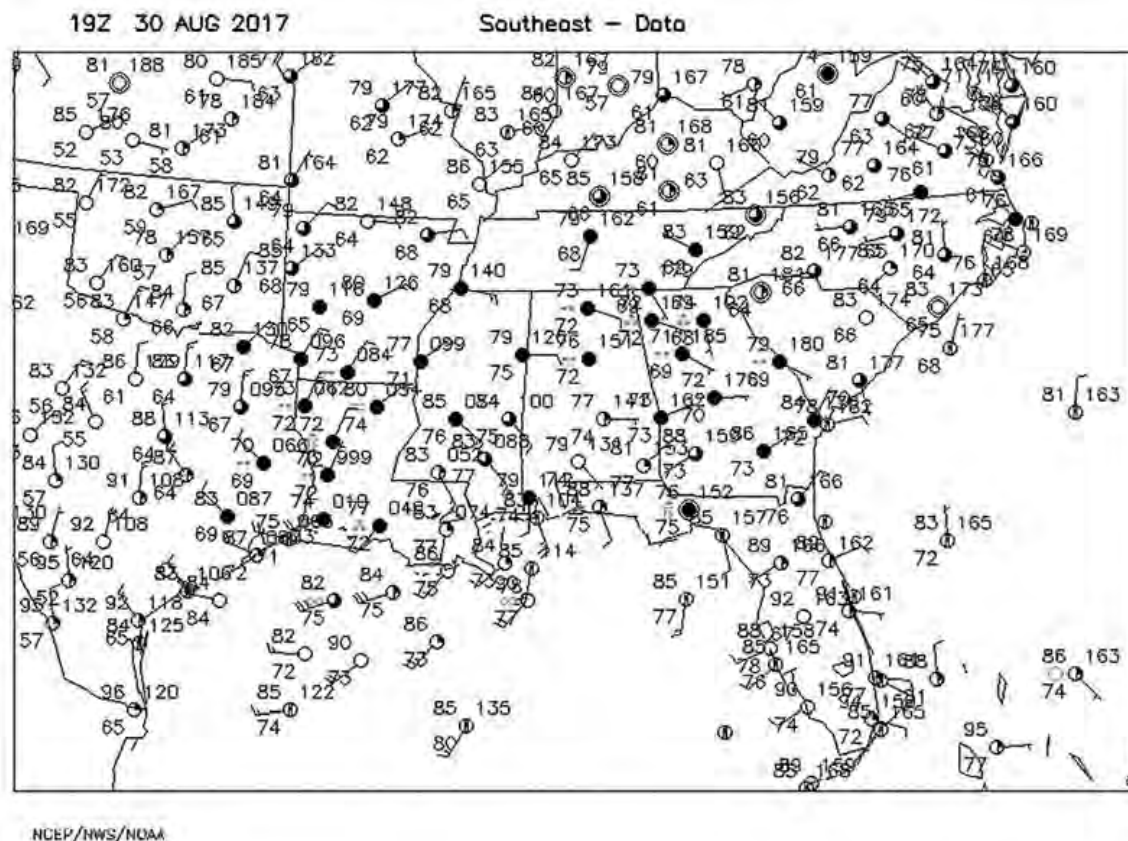
9. Wind direction is shown by the “arrow” shaft drawn into the circle representing the station.

North is to the top on the map and east is to the right. Wind is always named for the direction *from which* it blows. In the above depiction, the wind direction was generally from the \_\_\_\_\_.

10. Wind speed is rounded off to the nearest 5 knots (1 knot equals 1.2 miles per hour) and is symbolized by the combination of “feathers” drawn on the clockwise side of the wind-direction shaft. A full feather represents 10 knots and a half feather indicates 5 knots. A pennant flag indicates 50 knots. A wind-direction shaft without feathers depicts a 1-to-2 knot wind and a circle drawn around the station circle signifies calm conditions (0 wind speed). In this case, the reported wind speed was \_\_\_\_\_ kt.
11. Air pressure (adjusted to sea level) is reported in the station model as a coded number to the nearest tenth of a millibar (mb). To decipher the plotted pressure value, first place a decimal point between the second and third numbers from the left. Then add either a “9” or “10” to the left so that the resulting number falls within the range of air pressures that could occur at sea level (almost always between 950 mb and 1049 mb). For example, a plotted value of 126 represents 1012.6 mb and 863 denotes 986.3 mb. The air pressure reported at Brownsville was \_\_\_\_\_ mb.
12. Sky cover is reported inside the station circle and is expressed as a percentage or other descriptors (scattered, broken, overcast, obscured). As examples, an empty circle indicates no clouds, and a half-shaded circle means 50% of the sky is cloud-covered. The reported cloud cover at Brownsville was \_\_\_\_\_.
13. Current weather is plotted at the “9 o’clock” position on the station model (to the left of the station circle) using a variety of symbols representing the particular weather conditions. The two dots are the symbol of reported current weather being \_\_\_\_\_.
14. Other stations on the map segment show additional wind, sky cover and current weather conditions. Marfa, TX in the western “Big Bend” of the Rio Grande River, with a temperature of 28°F showed the current weather condition (stars or asterisks) as \_\_\_\_\_.
15. Lafayette, the station in south-central Louisiana, was showing a weather symbol denoting the intensity of a type of precipitation. The triplet symbol indicated that the precipitation intensity at that station was \_\_\_\_\_.
16. Several buoys in the Gulf of Mexico northeast of Brownsville showed the current weather condition of an “8” on its side. These symbolized \_\_\_\_\_.

The devastating Hurricane *Harvey* made landfall along the Texas coast on 25 August 2017, inundating the coastal region and many inland communities with unprecedented amounts of rainfall. The sprawling urban population of Houston was severely affected. The slow-moving pace of *Harvey* after landfall exacerbated conditions for persons living in this area. Despite being

downgraded to a tropical storm soon after landfall, its effects were widespread not only along the Texas coast, but other neighboring states along the Gulf of Mexico. Visit [Link 2A-1](#) to learn more about Hurricane *Harvey*. This Applications section of *Investigation 2A* highlights some of the weather conditions in the wake of Hurricane *Harvey*, the associated rainfall and other extreme, but very different, weather impacts in the western U.S. This activity examines the depiction of weather conditions through a variety of symbols used on surface weather maps during this time frame.



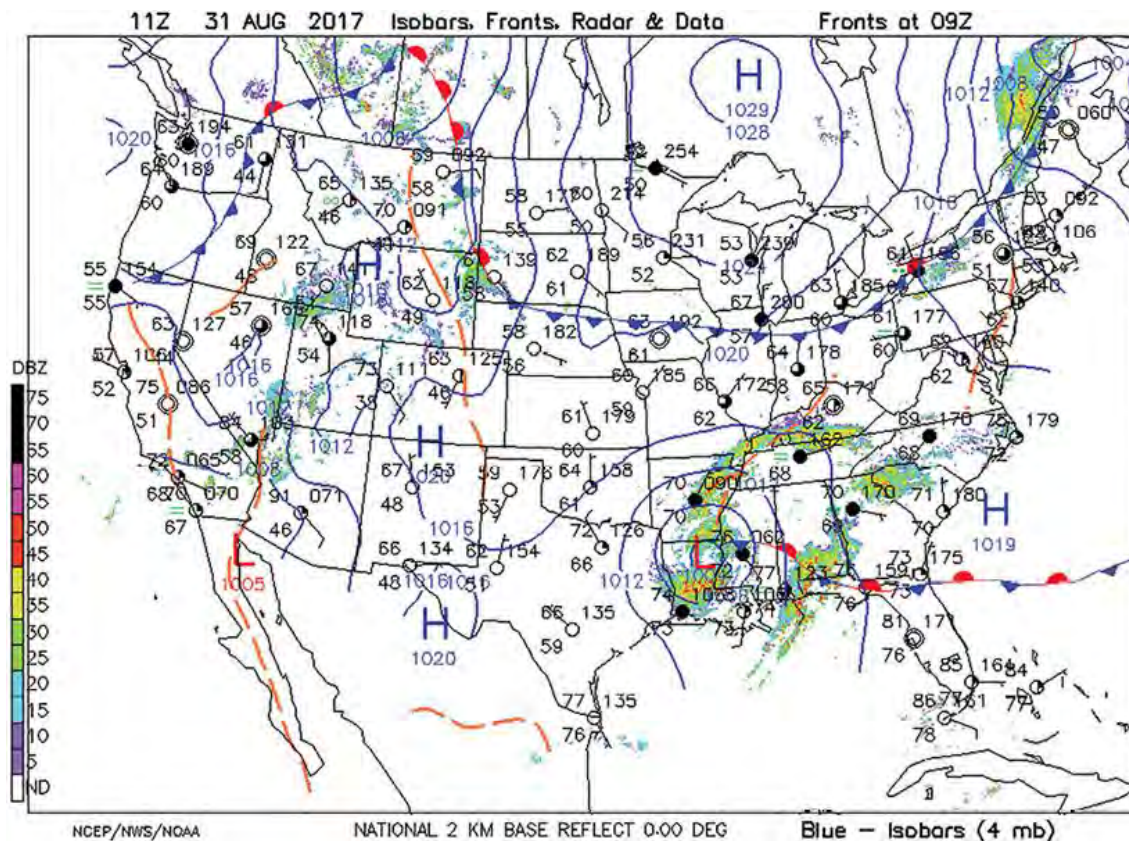
**Figure 4.** Un-analyzed surface weather map for 19Z 30 August 2017 with station model plots conveying surface weather observations of temperature, moisture, pressure, cloud cover, wind speed and direction.

**Figure 4** is the “Southeast – Data” weather map from the *RealTime Weather Portal*, a regional map of surface weather conditions at 19Z 30 AUG 2017 (3 PM EDT, 2 PM CDT, 1 PM MDT, 12 PM PDT, etc.). The regional map in Figure 4 is an example of one of the seven regional maps provided from the *RealTime Weather Portal* showing a greater number of stations than is possible on the broad national view. The weather data observed at the stations are plotted about



circles that represent the locations of those stations. The plotted weather conditions use the coded surface station model presented in the introductory portion of this investigation.

17. Weather conditions reported at map time at a station are plotted with symbols in the “9-o’clock” position alongside the station circle. Several stations from eastern Texas into Louisiana, as well as northern Alabama and Georgia had combinations of two and three dots plotted. These dots showed that several intensities of \_\_\_\_\_ were occurring.
18. Along the Gulf Coast, Tallahassee, (in Florida’s panhandle), had a version of the symbol [R] at the “9 o’clock” position alongside the station circle. This symbol showed that \_\_\_\_\_ was occurring.
19. Multiple stations in Kentucky do not have a wind barb or feather present at map time. Instead, these station model plots have a circle surrounding the station. This indicates that these stations were experiencing \_\_\_\_\_.



**Figure 5.** Analyzed weather map with isobars, fronts, radar & data for 11Z 31 AUG 2017, the morning after the Figure 4 map.

**Figure 5** depicts the centers of high and low-pressure systems, fronts, and weather conditions plotted in surface map station models at a selection of stations across the contiguous U.S. Colored shadings also show where a national network of weather radars detected precipitation across the U.S. The centers of high pressure on Figure 5 are marked by blue Hs representing the centers of expansive air masses. One High was centered in Ontario Province of Canada, north of the Great Lakes. Additional minor, local higher-pressure centers are also marked. Storm system centers, or Lows, are marked by red Ls. One Low was centered in northern Louisiana. This low-pressure system was the center of Tropical Depression *Harvey*, the remains of Hurricane *Harvey*, at map time.

20. Wind directions at the stations in the several-state region about the center of Tropical Depression *Harvey* (the major Low) were generally \_\_\_\_\_ as seen from above. This may be confirmed by locating the L on Figure 5 within two closed, circular isobars. Station models in Figure 4 also display this circulation pattern.
21. The broad Canadian High, impacting most of the U.S. Northern High Plains and Great Lake states, had wind directions around its center that are generally \_\_\_\_\_, as seen from above.
22. The wind flow patterns about both of these major pressure systems \_\_\_\_\_ generally consistent with their respective hand-twist models.
23. Observe the station model for Dallas, in northeastern Texas. The station model showed a temperature of \_\_\_\_\_ degrees F.
24. The Dallas dewpoint was \_\_\_\_\_ degrees F.
25. Winds at stations are symbolized and identified by the direction from which they blow. The wind at Dallas was generally from the \_\_\_\_\_.
26. The wind speed, rounded off to the nearest 5 knots, is shown by a combination of “feathers” along the direction shaft, where a long feather denotes 10 knots and a short feather is 5 knots. A single long feather on the tail end of the arrow shaft signifies Dallas’ wind speed was about \_\_\_\_\_ knots.
27. The coded pressure value at Dallas was plotted as “126,” meaning the actual atmospheric pressure corrected to sea level was \_\_\_\_\_ mb.
28. The sky cover (designated by the amount of coverage inside the station circle) at Dallas indicated \_\_\_\_\_ conditions.

In addition to the plotted station models, the surface weather map (Figure 5) contains an analysis of pressure patterns, such as the one you made in *Investigation 1A*.

29. At map time, a bold blue line with triangles was found across the U.S. Midwest along the northern Nebraska border, across Iowa, Illinois, Indiana, and Ohio. These symbols indicated the position of a \_\_\_\_\_ front. For frontal symbols, see the *Portal's* "User's Guide".
30. The frontal boundary extending east from northern Mississippi, through Alabama, and Florida into the Atlantic Ocean, has alternating red semicircles and blue triangles on opposite sides of the boundary marking the front as a \_\_\_\_\_ front.
31. Also, several locations across the map region showed dashed, orange lines. This symbolism indicated those boundaries were \_\_\_\_\_.

Another weather boundary that is displayed on this surface map, is a red line with semicircles designating a *warm front*. In this set of weather data, a warm front is displayed in the province of Saskatchewan in western Canada.

32. Irregular light blue, green, yellow and red shadings scattered across the map in the West and concentrated in the Southeast indicated where the national network of weather radars detected precipitation. The radar shadings showing the most intense precipitation at map time was generally located \_\_\_\_\_.

Additional positioning of Hs across the map is the result of localized areas of relatively higher or lower pressure from a larger set of pressure values than those appearing on Figure 5 map, as was noted in the *Investigation 1A*.

Also, in the western part of the U.S., where there is a lot of local variation of higher pressure systems, the weather is generally drier than in the east. In fact, at roughly the same times as Figures 4 and 5, numerous *Red Flag Warnings* were issued by the National Weather Service (NWS). A *Red Flag Warning* is a forecast issued by the NWS to inform area firefighters and land management agencies that conditions are supportive of wildland fire combustion and its rapid spread.

## Part 1

NAME\_\_\_\_\_

[SHOW ALL WORK](#)[SHOW ALL WORK](#)[SHOW ALL WORK](#)

**Worth 3 points.**

## Simplify

$$1.) \left(\frac{25}{36}\right)^{3/2}$$

$$1.) \left(\frac{25}{36}\right)^{-3/2}$$

$$1.) \left(\frac{64}{125}\right)^{-2/3}$$

$$1.) \left( \frac{64}{125} \right)^{2/3}$$

.....

**Worth 3 points.**

## Simplify

$$2.) \sqrt{28} + \sqrt{32} + 5\sqrt{20} - \sqrt{18}$$

$$2.) \ 3\sqrt{24} - \sqrt{12} + 4\sqrt{9} + \sqrt{27}$$

$$2.) -5\sqrt{27} + \sqrt{18} - 6\sqrt{32} + \sqrt{48}$$

.....

**Worth 3 points.**

↙ ↓ Rationalize The Denominator ↓ ↘

3.)  $\frac{6+3\sqrt{5}}{3+\sqrt{5}}$

$$3.) \frac{5-4\sqrt{3}}{1-\sqrt{3}}$$

3.)  $\frac{7+2\sqrt{6}}{5-\sqrt{6}}$

[illegible]



4.)  $\frac{3+2i}{4+i}$

4.)  $\frac{2+i}{1-2i}$

4.)  $\frac{3-i}{4-i}$

5.) If  $f(x) = -2x + 3$  Find  $f^{-1}(x)$

5.) If  $f(x) = 5x - 2$  Find  $f^{-1}(x)$

5.) If  $f(x) = 4x + 3$  Find  $f^{-1}(x)$

6.) Find an equation of a line given  
given the following two points  
 $(3, -4)$  &  $(5, 6)$

6.) Find an equation of a line given the following two points  $(-3, -5)$  &  $(-5, 11)$

6.) Find an equation of a line  
given the following two points  
 $(2, -5)$  &  $(5, 1)$

## PART 2

NAME \_\_\_\_\_

SHOW ALL WORK

[SHOW ALL WORK](#)[SHOW ALL WORK](#)

**Worth 3 points.**

ADD

7.)  $\frac{x-1}{x^2+x-6} + \frac{x+3}{x^2-3x+2}$

7.)  $\frac{x-3}{x^2-9} + \frac{x+2}{x-3}$

$$7.) \frac{x+4}{x+5} + \frac{x-1}{x^2-25}$$

**Worth 3 points.**

Let  $f(x) = 4x^2 - x$  and  $g(x) = x + 3$  and  $h(x) = x - 4$

8.) Find:  $(g \circ g)(2)$

8.) Find:  $(f \circ g)(-4)$

8.) Find:  $(f \circ h)(-3)$

**Worth 3 points.**

## GRAPH

9.)  $f(x) = 3 + \sqrt{x-2}$

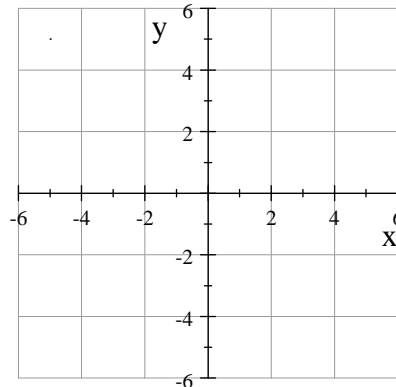
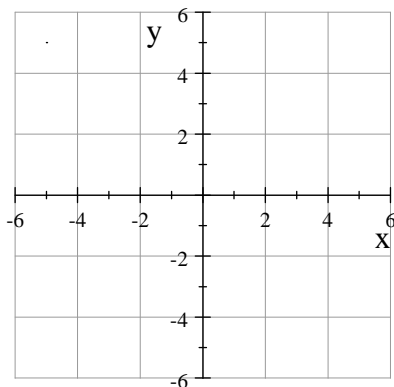
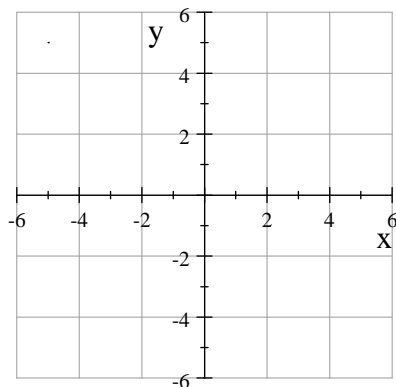
9.)  $f(x) = \sqrt{x+2} - 4$

9.)  $f(x) = -1 - \sqrt{x+4}$

Find the domain and range.

Find the domain and range.

Find the domain and range.



**Worth 5 points.**

Graph the parabola.....Find the vertex and x-intercepts and y-intercept

10.)  $f(x) = x^2 - 4x - 5$

10.)  $f(x) = 2x^2 + x - 3$

10.)  $f(x) = -x^2 - 3x + 4$

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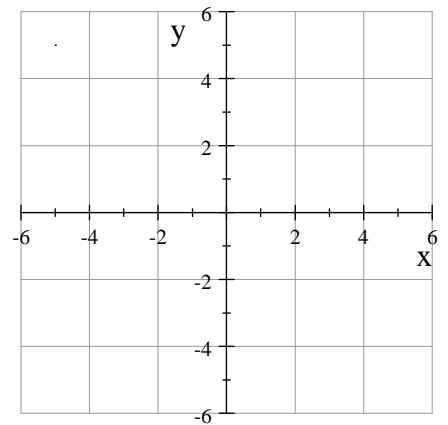
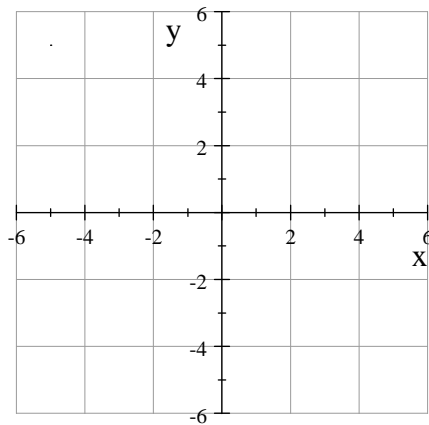
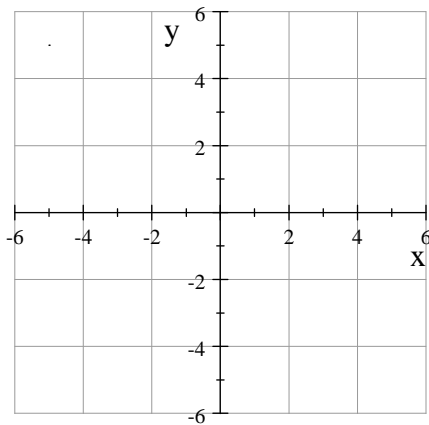
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**Worth 5 points.**

GRAPH Find the vertical & horizontal asymptotes & x and y intercepts

11.)  $f(x) = \frac{x-3}{x+2}$

11.)  $f(x) = \frac{3x+1}{x-2}$

11.)  $f(x) = \frac{x-3}{2x+8}$

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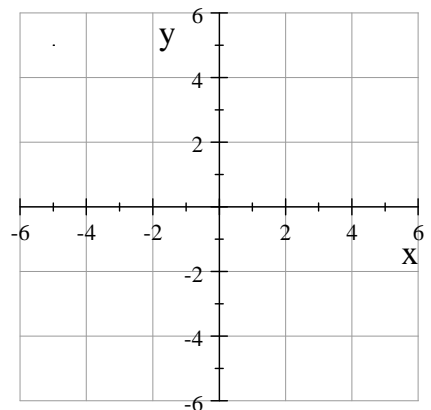
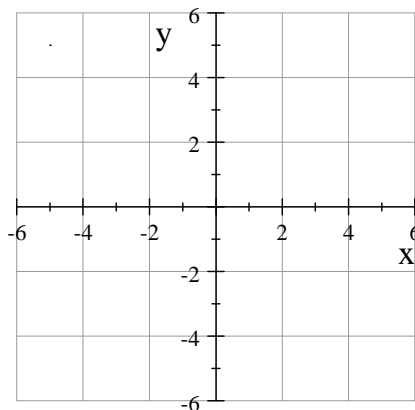
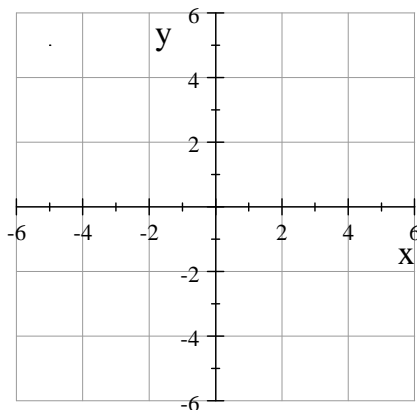
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## PART 3

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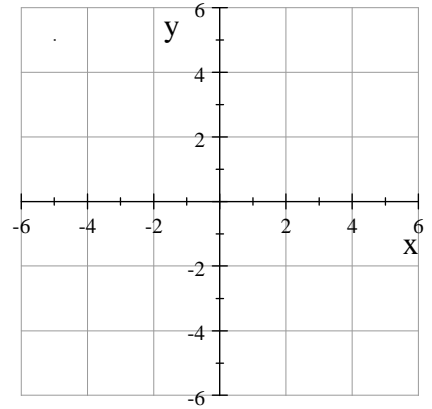
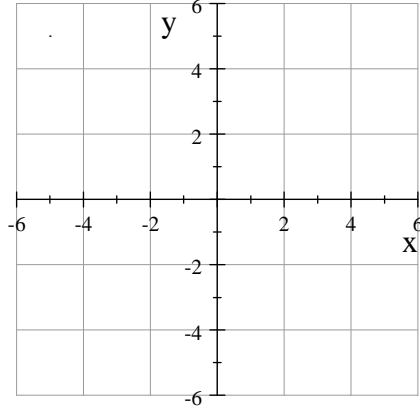
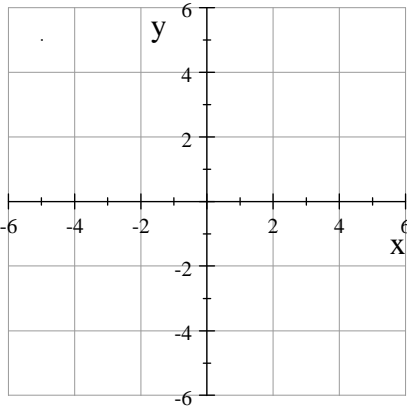
**Worth 3 points.**

**Graph Show the horizontal asymptote**

12.)  $f(x) = e^x + 2$

12.)  $f(x) = 3e^x - 2$

12.)  $f(x) = -e^x + 4$



**Worth 4 points.**

**Expand the logarithm**

13.)  $\log \frac{\sqrt{x}}{(x-1)^2 y}$

13.)  $\ln \frac{4x^2(x-1)}{5(x+3)^3}$

13.)  $\log_3 \sqrt[3]{\frac{5x^2}{(x-4)}}$

13.)  $\ln \frac{\sqrt{x+2} \sqrt{x}}{(x-3)^3}$

**Worth 4 points.**

**Write as one logarithm (condense)**

14.)  $\log(x+2) - 3\log(z-3) + 4\log y$

14.)  $\frac{1}{3} \log x + 5\log(y-2) - 4\log y$

14.)  $5\log x - \frac{1}{2} \log(y-2) + 2\log(m+2) - \log y$

14.)  $\frac{1}{3} \log(x-2) - 5\log(y-2) - 4\log y$

**Worth 5 points.**

15.)  $x^4 + 2x^2 - 15 = 0$

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**Solve. Find all Real & Complex Solutions.**

15.)  $6x^3 + 7x^2 - 3x = 0$

15.)  $5x^2 - 13x - 6 = 0$

**Worth 3 points.**

16.)  $3x^2 + 11x - 4 = 0$

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**Solve. Find all Real & Complex Solutions.**

16.)  $4x^2 - 16x + 15 = 0$

16.)  $5x^2 - 13x - 6 = 0$

**Worth 4 points.**

17.)  $5e^{3x-1} = 15$

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**Solve.**

17.)  $e^{x+3} = 22$

17.)  $-3e^{4x+1} = -18$

**Worth 4 points.**

18.)  $\sqrt{x+3} + 5 = 12$

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**Solve.**

18.)  $\sqrt{2x+5} - 2 = 4$

18.)  $\sqrt{x-1} - 4 = 5$

19.)  $5^{x-2} = 25$

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19.)  $32 = 2^{x+1}$

19.)  $5^{3x-2} = 20$

20.)  $\ln(6x - 2) = 5$

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20.)  $\ln(3x + 2) = 7$

20.)  $\ln(4x + 1) = 6$

21.)  $\frac{6x}{2x+1} - \frac{3}{x} = -1$

.....

21.)  $\frac{1}{x} - \frac{3x}{x+2} = 2$

21.)  $\frac{x}{8} + \frac{1}{x-2} = \frac{x+2}{2x+4}$

## PART 4

Name \_\_\_\_\_

**Worth 5 points.**

**SOLVE**

22.)  $x^4 + 3x^3 - 8x^2 - 12x + 16 = 0$     22.)  $x^3 - 3x^2 - x + 3 = 0$     22.)  $x^4 + 2x^3 - 5x^2 - 6x = 0$

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**Worth 4 points.**

**SOLVE**

23.)  $64x^3 - 1 = 0$     23.)  $27x^3 - 64 = 0$     23.)  $125x^3 + 8 = 0$

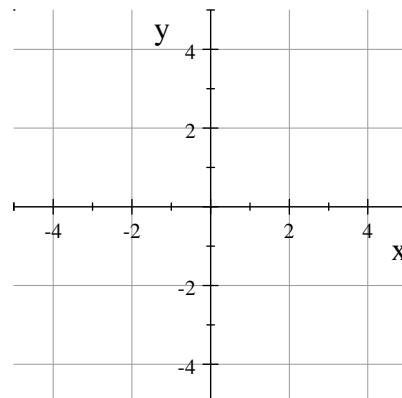
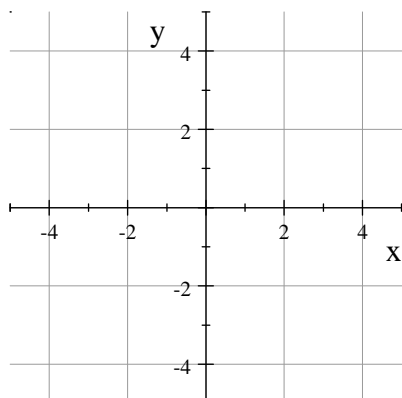
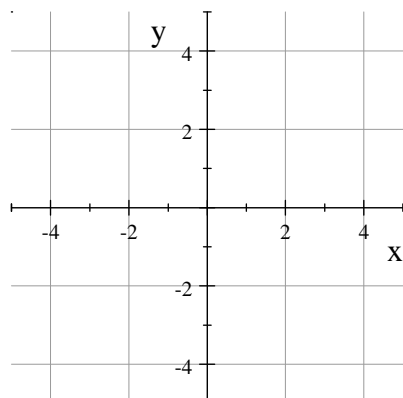
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**Worth 5 points.**

**GRAPH**

24.)  $f(x) = \begin{cases} |x| + 2 & \text{if } x \leq -1 \\ -x^2 + 3 & \text{if } x > 0 \end{cases}$     24.)  $f(x) = \begin{cases} 2|x| - 2 & \text{if } x \leq -1 \\ x^2 - 2 & \text{if } x > 0 \end{cases}$     24.)  $f(x) = \begin{cases} |x + 2| & \text{if } x > 1 \\ -x - 1 & \text{if } x \leq 0 \end{cases}$

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**Worth 5 points.**

25.) The half-life of an isotope is 1250 years. If initially there are 150 grams of the isotope, how much of the isotope remains after 300 years.  $\{P(t) = P_0 e^{kt}\}$

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25.) The half-life of an isotope is 1400 years. If initially there are 200 grams of the isotope, how much of the isotope remains after 500 years.  $\{P(t) = P_0 e^{kt}\}$

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25.) The half-life of an isotope is 1750 years. If initially there are 280 grams of the isotope, how much of the isotope remains after 650 years.  $\{P(t) = P_0 e^{kt}\}$



## Clovis Community College

### Core Competencies Assessment 2019-2020—Area V: Humanities and Fine Arts

**Class: HIST 1130 World Civilization I**

**Faculty:**

**Common Core No.: HIST 1130**

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
<p><b>1. Students will analyze and critically interpret significant and primary texts and/or works of art (this includes fine art, literature, music, theatre, and film.)</b></p> <p>For all Humanities and Fine Arts Competencies, students should: Possess an understanding of the present that is informed by an awareness of past heritages in human history, arts, philosophy, religion, and literature, including the complex and interdependent relationships among cultures.</p> <p>Note: For the purposes of the Humanities and Fine Arts requirement, courses will come from the areas of History, Philosophy, Literature, Art, Dance, Music, Theatre and those offerings from other disciplines that also include, among other criteria, analytical study of primary texts and /or works of art as forms of cultural and creative expression. This requirement does not include work in areas such as studio and performance courses or courses that are primarily skills-oriented. The requirements must be fulfilled by courses from two different disciplines.</p>	<p>Students in the face to face and online sections of HIST 1130 are required to take objective midterm and final exams that contain an array of multiple-choice and essay questions that align with one or all of the four categories and elements that comprise the State of New Mexico core competencies for HIST. 1030 in the area of Humanities and Fine Arts. The pedagogical basis for questions focus upon course readings, written document analysis assignments, and a range of visual content elements including PowerPoint presentations and video documentaries and narratives. The thematic concentration of the material particularly focus upon ideas and traits related to social institutions, internal and external factors that influence the understanding of the</p>		

<u><b>Competencies</b></u> (Learning Outcomes Being Measured)	<u><b>Assessment Procedures</b></u> (Process/Instrument named or described – rubric attached)	<u><b>Assessment Results</b></u>	<u><b>How Results Will Be Used To Make Improvements</b></u>
	present as related to an awareness of past heritages in World History, the nature and importance of belief systems in forming behavior and social mores, and how these systems are embedded in laws and social institutions – as related to the development of global society from antiquity through the year 1450.		
<b>2. Students will compare art forms, modes of thought and expression, and processes across a range of historical periods and/or structures (such as political, geographic, economic, social, cultural, religious, and intellectual).</b>	See the procedural description listed above.		
<b>3. Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives.</b>	See the procedural description listed above.		

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
4. Students will draw on historical and/or cultural perspectives to evaluate any or all of the following: contemporary problems/issues, contemporary modes of expression, and contemporary thought.	See the procedural description listed above.		

**Faculty Member Completing Assessment:**

**Date:**

**Reviewed by:**  
(Division chair)

**Date:**

*All class assessment forms are due to your division chair by June 30 or as designated by the Division Chair.  
All assessments are due from the Division Chairs to the Assessment Committee Chair by July 30.*

## FINAL RUBRIC for Oral Presentation-Short Fiction

Excellent	Good	Many Improvements needed	Only the minimum.....	
<p>The video was creative. Different props were used that supported its theme.</p> <p><b>54</b></p>	<p>The video was creative, and had one prop to support its theme.</p> <p><b>45</b></p>	<p>The video was somewhat creative, but lacked props to support its theme.</p> <p><b>35</b></p>	<p>The video was not creative. Props were missing to support its theme.</p> <p><b>25</b></p>	
<p>The claims are supported by the <b>reading of 2 quotations and 2 examples</b> from the literary works.</p> <p><b>54</b></p>	<p>Some quotation / examples from the literary works are used for support.</p> <p><b>46</b></p>	<p><b>Only</b> quotations <b>or</b> examples from the literary works were read from support.</p> <p><b>35</b></p>	<p>No quotations/examples were used to support the claims.</p> <p><b>25</b></p>	
<p>The replies were insightful, respectful, and met the length requirement.</p> <p><b>54</b></p>	<p>The replies were somewhat insightful, but lacked the length requirement.</p> <p><b>45</b></p>	<p>Only <b>one</b> reply was posted.</p> <p><b>35</b></p>	<p>There were no replies.</p> <p><b>25</b></p>	
<p>The replies were free of grammatical and writing errors.</p> <p><b>53</b></p>	<p>The replies had some grammatical and writing errors.</p> <p><b>45</b></p>	<p>The majority of the replies had some grammatical and writing errors, but were still clear enough.</p> <p><b>35</b></p>	<p>The replies were hard to follow due to a large number of grammatical and writing errors. <b>25</b></p>	

## **Discussion/ Oral Presentation/Final Project**

### **This assignment is worth 215 points.**

Create and post a video where you tell us about a writer/literary piece from this class that left an impression on you for years to come. The video should be 3-5 minutes long...=)

Tell us the reason for your choice by supporting your claim with examples and two quotations from the text and/or life of the author. Draw connections to your own life and show that the work/author still has relevance today.

**This video should be very creative; include at least two props that convey your ideas, and/or add music, and support your overall theme.**

If you need examples for this assignment, please look at the video I created about literature. =)

**The videos have to be posted by..... so that everyone has enough time to view them and is able to post their replies.**

**For your replies, please watch two videos created by your classmates and comment on those in eight sentences each. Be kind and thoughtful. I will evaluate the replies by looking at the depth of the content and the composition and writing.**

**I look forward to your ideas, choices, and props. Enjoy the process of creation and thoughtfulness!**



**Clovis Community College**  
**Class Assessment 2019-2020**

**Class: History 1120 Survey of American History since 1865**

**Faculty:**

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
1. Students will analyze and critically interpret significant and primary texts and/or works of art.	All students took a comprehensive and objective final exam. Every multiple-choice question on the exam was linked to one or more of the course objectives that address the area state competencies. Questions on the final exam were based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. Ninety of the one hundred questions came from the three hourly exams taken during the semester. The final ten questions evaluated students' understanding of ideas and topics presented in the last class meeting.		
2. Students will compare art forms, modes of thought and expression, and processes across a range of historical periods and/or structures.	All students took a comprehensive and objective final exam. Every multiple-choice question on the exam was linked to one or more of the course objectives that address the area state competencies. Questions on the final exam were based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. Ninety of the one hundred questions came from the three hourly exams taken during the semester. The final ten questions evaluated students' understanding of ideas and topics presented in the last class meeting.		

<b><u>Competencies</u></b> (Learning Outcomes Being Measured)	<b><u>Assessment Procedures</u></b> (Process/Instrument named or described – rubric attached)	<b><u>Assessment Results</u></b>	<b><u>How Results Will Be Used To Make Improvements</u></b>
3. Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives	All students took a comprehensive and objective final exam. Every multiple-choice question on the exam was linked to one or more of the course objectives that address the area state competencies. Questions on the final exam were based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. Ninety of the one hundred questions came from the three hourly exams taken during the semester. The final ten questions evaluated students' understanding of ideas and topics presented in the last class meeting.		
4. Students will draw on historical and/or cultural perspectives to evaluate any or all of the following: contemporary problems/issues, contemporary modes of expression, and contemporary thought.	All students took a comprehensive and objective final exam. Every multiple-choice question on the exam was linked to one or more of the course objectives that address the area state competencies. Questions on the final exam were based on ideas, topics, primary documents, and cultural traits presented in class lectures, discussions, and documentary films. Ninety of the one hundred questions came from the three hourly exams taken during the semester. The final ten questions evaluated students' understanding of ideas and topics presented in the last class meeting.		

**Faculty Member Completing Assessment:**

**Date:**

**Reviewed by:**

**Date:**

(Division chair)

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*All assessments are due from the Division Chairs to the Assessment Committee Chair by July 30.*



Clovis Community College  
**ENG 203-1N0 (CC# 2370) INTRODUCTION TO THE NOVEL**  
Spring, 20XX

INSTRUCTOR:

OFFICE:

OFFICE PHONE:

OFFICE HOURS: Mon 3:00-5:00; Tue 1:30-4:30; Wed 1:30-3:00; Thur and Fri by apt.

E-MAIL: Communicate with me through the email feature of Canvas. If Canvas is down, try [...](#)

I will check and respond to all mail messages at least four times a week, Sunday through Saturday, with no more than 72 hours between checking the system.

**TEXTS** Jane Smiley, **Thirteen Ways of Looking at the Novel** (Knopf) 2005

**ISBN-10:** 1400033187

The following novels are also primary texts for this class:

**Dickens, Charles.** *The Personal History of David Copperfield*

**Chopin, Kate.** *The Awakening*

**Hemingway, Ernest.** *The Sun Also Rises*

**Orwell, George.** *1984*

**Morrison, Toni.** *The Bluest Eye*

**Anaya, Rudolfo.** *Bless Me, Ultima*

**Smiley, Jane.** *A Thousand Acres*

**NOTE:** Current versions of these novels are available through the CCC Bookstore, but many other sources can be utilized as well. However, you should recognize that alternatively sourced books will have different page numbering, and that different page numbering will require an adjustment by you, the reader and student. Though I will try to help, I will not be responsible for your ability to follow specific directions for texts if you use a different edition.

**NOTE: All exams will be proctored. Students must make a satisfactory proctoring arrangement.** (More information below.)

**COURSE DESCRIPTION:** This course is an introduction to the study of long fiction, such as novels and novellas, focusing on the use of critical approaches to analyze the ways that narrative is created. Students will read and analyze a diverse range of texts that may include varying time periods, nationalities, regions, genders, and ethnicity.

#### **COMMON COURSE STUDENT LEARNING OUTCOMES**

1. Read a selection of fictional works.
2. Identify literary devices of long fiction, such as plot, character, setting, point of view, and theme.
3. Use critical approaches and engage in discussions to analyze fiction.
4. Define the strengths and limitations of long fiction forms.

#### **INSTITUTION-SPECIFIC STUDENT LEARNING OUTCOMES**

1. Analyze selected contemporary texts, social contexts of origin and reception, and the lives of authors, and examine the connections and intersections.
2. Analyze the social discourses and knowledge in novel forms.
3. Engage in respectful and exploratory dialogue with peers.

**ONLINE COURSE ATTENDANCE:** In an online course, “attendance” is recorded when a student logs into class AND does at least one other action (such as turning in an assignment or posting a message). Simply logging in is not enough to count as “attendance.” Attendance is required at all sessions in each course for which the student is enrolled. Consult the college catalog for specific information regarding limits for absences. Students on financial aid and VA programs may have additional attendance requirements or restrictions. Check with the Financial Aid / VA Office for more information.

**CCC E-MAIL:** All CCC students have a CCC email account. It is set up when students enroll. Campus-wide messages and important information go to your CCC email inbox. To access student email, log onto Pathway, and click the Student Icon on the top-right.

**STARFISH:** Clovis Community College uses Starfish Early Alert as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service. To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at [www.clovis.edu/students/starfish.aspx](http://www.clovis.edu/students/starfish.aspx). If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

**WITHDRAW:** If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. Instructors do not withdraw students. Dual credit students must contact their high school counselor.

#### **QUALIFIED STUDENTS WITH DISABILITIES:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the [Special Services](#) Office (575-769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met.

#### **ONLINE TUTORING:**

CCC now offers free online tutoring in most academic subjects. Access BrainFuse through [Pathway](#) for a live online session with a professional tutor. Click [HERE](#) to see how to access Brainfuse online tutoring.

#### **COPYRIGHT:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

#### **SAFEGUARDS:**

Back up all work in a memory device and make a hard copy; computers are not infallible. It is the student's responsibility to ensure that his/her computer is functioning properly.

**NETIQUETTE:** Netiquette is using good manners in cyberspace. Since most of our communication will be in text, be sure your words express the proper tone. Remember e-mail can be read by anyone. Making personal attacks or sending threats is unacceptable and will be reported per the guidelines up to and including administrative withdrawal from the course. Whether you are in a chat room, writing an e-mail or posting to a discussion area, remember to use proper netiquette and be considerate of others. If you would like to read more on the subject of netiquette, use the links below.

<http://www.iwillfollow.com/email.htm>

<http://www.albion.com/netiquette/corerules.html>

**EMERGENCY ALERT:** Since our class is online, service interruptions are very unlikely. In case of an unscheduled Canvas outage, please submit homework via email to my email address (listed above). However, in case of relevant campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

**TECHNOLOGY REQUIREMENTS:** Canvas is designed for maximum compatibility and

minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please click here to see basic computer specifications for Canvas. Please keep in mind that computers are available for student use in the library.

**TECHNICAL SUPPORT:** CCC Help Desk support is available Mon – Fri, 8:00 am – 4:30 pm at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom.

You may also find answers to common questions / problems on [eCampus](#) and click on the tab titled "Technical Support." If the hyperlink does not work, please enter <http://www.clovis.edu/Type4.asp?pageid=ecindex> into your browser.

**PRMARORING INFORMATION:** Most online courses require a proctor for exams. The following are CCC approved proctor options:

- CCC's Testing Center (No fee for CCC students // ID required)
- Military Education Centers (may have a fee // DoD ID required)
- Testing Centers at other Colleges / Universities (may have a fee // ID required)
- PrMarorU (has a fee // webcam required // 2 forms of ID required)

If you live within 50 miles of Clovis, NM, you will be required to take your proctored exam at CCC's Testing Center or use ProctorU. If you live 51+ miles from Clovis, NM you may use any of the above proctor options. Students with a valid DoD ID card may use a military education center, if desired.

It is the student's responsibility to find a suitable proctor, make testing arrangements, and pay any associated fees for proctoring services. Be aware that ALL proctors require a valid photo ID, some proctors charge a fee, and some proctoring options require a webcam.

Dual credit students should contact their instructor for special instructions.

Students must report their proctor choice to their instructor. Please refer to your syllabus and instructor's directions for more details, deadlines, and further information. If you need CCC's Proctor Approval Form, it is linked in Online Course Information.

## ONLINE CLASS POLICIES

### VIEWING OF FILMS:

The viewing of specific films is a requirement of this class. These films are embedded in the course section. However, even using the embed, watching a film will require broadband and the time necessary to make it through the films. Some films may be better experienced in DVD or Blu-Ray, which students may wish to arrange for themselves.

### SUBMISSION OF ASSIGNMENTS:

You are responsible for getting and turning in all assignments on time. This setup of Canvas makes no exceptions, and if you are late trying to post your assignment, it will likely not accept it. Furthermore, we move way too fast in this class for late assignments. NOTE: If you have technical difficulties uploading your assignment into the course dropbox, send the project to me via the course email or college email (paul.nagy@clovis.edu). Any paper sent to me through these email addresses/ alternative means must have a proper time stamp for it to be read, but at least you need not lose hope due to a technical glitch. Although, choosing not to wait till the last minute will always serve you better, as most technical problems can be solved in a reasonable period of time.

### GRADING POLICY:

Your grade in English 211 online will tentatively be based on:

Assigned essays and other projects	350 pts. (approx.)
Unit discussions	165 pts. One midterm exam
	135 pts
<u>One final exam</u>	<u>150 pts.</u>
Approximate total	800 points possible 100%

The grading scale (a standard one) is as follows:

90-100% = A

80-89% = B

70-79% = C

60-69% = D

Below 60% = F

All written work submitted for a grade (including essays) must be double-spaced, 12-point font, with one-inch margins unless otherwise specified. MLA style is the default if questions arise.

I want all of my students to succeed, and I am willing to work with you toward that goal. Therefore, if any special circumstances arise for you during the semester, please talk to me about it. Depending on the situation, I might advise you to drop the class, or perhaps we can work things out. *Communication is the key.*

#### **ACADEMIC DISHONESTY:**

Academic dishonesty is an act by a student to use and/or represent the work of other individuals as that of his or her own production and/or creation. Academic dishonesty is unacceptable within the campus and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor's evaluation of the severity of the dishonest act. Consult the college catalog for more information on the institutional policy on academic dishonesty.

#### **GENERAL INFORMATION:**

Check the current college academic calendar at [pathway.clovis.edu](http://pathway.clovis.edu) for information concerning course withdrawal deadlines.

### **English 203 – Schedule of Readings and Assignments**

**YOU ARE RESPONSIBLE FOR READING THE ENTIRE SELECTION IDENTIFIED. DISCUSSIONS, PROJECTS AND DUE DATES ARE DETAILED IN CANVAS.**

#### **Unit 1: *What is a Novel?***

##### **Reading:**

Smiley, Chapter 2 "What is a Novel?"

*David Copperfield*, Charles Dickens

Discussion A	5 pts
Discussion B	10 pts
Discussion C	10 pts
Discussion D	10 pts
Unit One project	50 pts

#### **Unit 2: *The Origins and Purposes of the Novel***

##### **Reading:**

Smiley, Chapter 3 "Who is a Novelist?"

*The Awakening*, Kate Chopin

Unit 2 Discussion A	10 pts
Unit 2 Discussion B	10 Pts.
Unit 2 Project	50 pts

### **Unit 3: *Head Games and Hidden Truths***

#### **Reading:**

Smiley, Chapter 4 “The Origins of the Novel”

*The Sun Also Rises*, Ernest Hemingway

Unit 3 Discussion A      10 pts

Unit 3 Discussion B      10 Pts.

Unit 3 Project              50 pts

**MIDTERM EXAM—look in Canvas      135 pts**

### **Unit 4: *Heaven and, more often, Hell***

#### **Reading:**

Smiley, Chapter 6 “The Morality of the Novel”

*1984*, George Orwell

“1984” (film)(released in 1984) directed by Michael Radford

John Hurt, Suzanna Hamilton, Richard Burton, rated R

Unit 4 Discussion A      10 pts

Unit 4 Discussion B      10 Pts.

Unit 4 Project              50 pts

### **Unit 5: *Who Says What?***

#### **Reading:**

Smiley, Chapter 7 “The Art of the Novel”

*The Bluest Eye*, Toni Morrison

Unit 5 Discussion A      10 pts

Unit 5 Discussion B      10 Pts.

Unit 5 Project              50 pts

### **Unit 6: *Our Nada who art in Nada***

#### **Reading:**

Smiley, Chapter 8 “The Novel and History”

*Bless Me, Ultima*, Rudolfo Anaya

Unit 6 Discussion A      10 pts

Unit 6 Discussion B      10 Pts.

Unit 6 Project                      50 pts

## **Unit 7: *Intertextuality redux***

### **Reading:**

Smiley, Chapter 9 “The Circle of the Novel”

*A Thousand Acres*, Jane Smiley

*King Lear*, William Shakespeare

*Ran*, directed by Akira Kurosawa (film) (1985)

“A Thousand Acres” (film) (1997) directed by Jocelyn Moorhouse  
Michelle Pfeiffer, Jessica Lange, rated R

Unit 7 Discussion A            10 pts

Unit 7 Discussion B            10 Pts.

Unit 7 Project                      50 pts

**Final Exam—look in Canvas                      150 pts.**

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## ENG 203-3N7 (CC# 2370) INTRODUCTION TO THE NOVEL

RUBRIC for Writing Assignments

### Rubric for Writing Assignment

**50 points possible**

2-3 pages, double spaced, 12-point Times New Roman font, 1-inch margin

**Objectives:** Practice analysis of novel.

**Key Points for Analysis:**

- Identify the reading by its title or author, or the particular discussion.)
- Make connections with your own experience and/or with other texts.
- How will you use this text to further your understanding of literature?

**Criteria** – Refer to the Instructions and Samples before submitting.

**Depth of Analysis: 25 points\_\_\_\_\_/25\_\_**

Novice 0 (0%)–12 (25%) points

Demonstrates limited effort at engaging the reading and criticism. Competent 13 (50%)–20 (75%) points

Demonstrates a conscious and thorough understanding of the work, its context and subject matter. Proficient 21 (80%)–25 (100%) points

Considers and evaluates the reading and criticism extensively.

**Use of Evidence: 15 points\_\_\_\_\_/15\_**

Novice 0 (0%)–5 (16%) points

Uses incomplete or vaguely-developed examples to support claims, with limited text-to-text, text-to-criticism, and text-to-self connections.

Competent 6 (30%)–11 (50%) points

Uses relevant examples from the texts studied to support claims. Makes insightful and applicable text-to-text and text-to-self connections.

Proficient 12 (66%)–15 (100%) points

Demonstrates a commitment to use the insights toward educational goals. Poses questions and challenges author claims.

**Conventions and Citations—10 points\_\_\_\_\_/10\_**

Novice 0 (0%)–3 (33%) points

Uses language that is vague or imprecise for the audience or purpose, with little sense of voice, and limited attempts to vary sentence structure. Exhibits frequent errors in spelling, verb tense, subject-verb agreement, punctuation, pronouns, and possessives. Appears to quote but includes no mention of source.

Competent 4 (40%)–6 (60%) points

Uses precise language with a sense of voice, awareness of audience, and varied sentence structure.

Demonstrates control of prose with few errors. Identifies sources with attempt to format.

Proficient 7 (70%)–10 (100%) points

Speaks and writes with authority. Uses language that is precise and engaging, with notable sense of voice, awareness of audience and purpose, and varied sentence structure. Demonstrates control of the conventions with essentially no errors, even with sophisticated language. Consistently and specifically identifies sources demonstrating mastery of format.



## Project #3 Draft

A camera must adjust the distance between the lens and the digital sensor, or film. The appropriate distance between them depends on the focal length of the lens and the distance between the lens and the object that is being photographed. We will consider the focal length to be a fixed value (although some lenses provide a range of focal lengths).

### Part 1:

You will need to investigate the meaning of the terms used above, the relationship between these lengths, and work toward understanding a little about lenses. Your instructor can advise you in how to do this if you don't know where to get started. You will need to define variables for each of these lengths and write an equation that defines the distance between the lens and the sensor as a function of the distance between the lens and the object. This equation will also involve the focal length, but we will treat it as a fixed value. Classify the function (i.e. is it constant, linear, quadratic, polynomial, rational, exponential, or logarithmic).

Once you have done this, you will need to write a short post in the CNM Learn (Blackboard) Discussion Forum that will allow other students in the class to understand a little about lenses, show them what function you have chosen, and explain where that function came from. Include pictures of diagrams and algebraic work if you think it will help your audience understand the problem better. Include example inputs and outputs from the function, choosing reasonable values for the focal length and distance to the object. Explain what those inputs and outputs mean.

Make sure to cite your sources. You can do this by linking to them directly from CNM Learn. Make sure to use appropriate mathematical notation throughout your post.

The due date for your post is ...

### Part 2:

After the due-date, read and respond to two other student's posts. Your response should provide constructive feedback on their post. Did you understand the topic they were trying to explain? Do you have more questions about the problem? Do you understand why they chose their function, what it does, and where it came from? Make your responses constructive. Provide feedback that will help them improve their explanation.

You will be required to continue to read and respond to the posts you chose as the project continues. Your instructor will also contribute to these discussions.

The due date for your initial responses is ...

### Part 3:

Read the response(s) to your original post and assess how effectively you have informed your peers about lenses and your function. Answer any questions or concerns that your peers brought up.

---

## Part 4:

Investigate what happens when the distance to the object being photographed is close to the focal length of the lens. Substitute values into your function and examine the graph of the function. What can you conclude? Is it possible to photograph an object that is closer than the focal length of the lens? What if it's farther than the focal length, but close to it? How will this affect the design of the lens?

Ask questions of your peers and your instructor in CNM Learn if you are unsure about how to answer these questions.

Write a post in CNM Learn that explains how you investigated these questions and what conclusions you can make. Include a graph of your function and explain what feature of the graph justifies your conclusions. Make sure to use proper mathematical notation so that you communicate your conclusions clearly.

## Part 5:

Read and respond to the conclusions your peers made in the posts that you replied to in part 2. Did you understand their conclusions and how they came to them?

Read any responses to your own conclusion and address any questions your peers may have.

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

*Exercise 1 modified from Steven D. Schafersman, Miami University*

**Exercise 1: Recurrence Interval** A stream's flood frequency is given by the stream's flood recurrence interval, which is defined as the average interval of time, in years, within which a flood of given discharge or larger will occur.



We can calculate the recurrence interval of floods by:

$$RI = \frac{(N + 1)}{m}$$

where

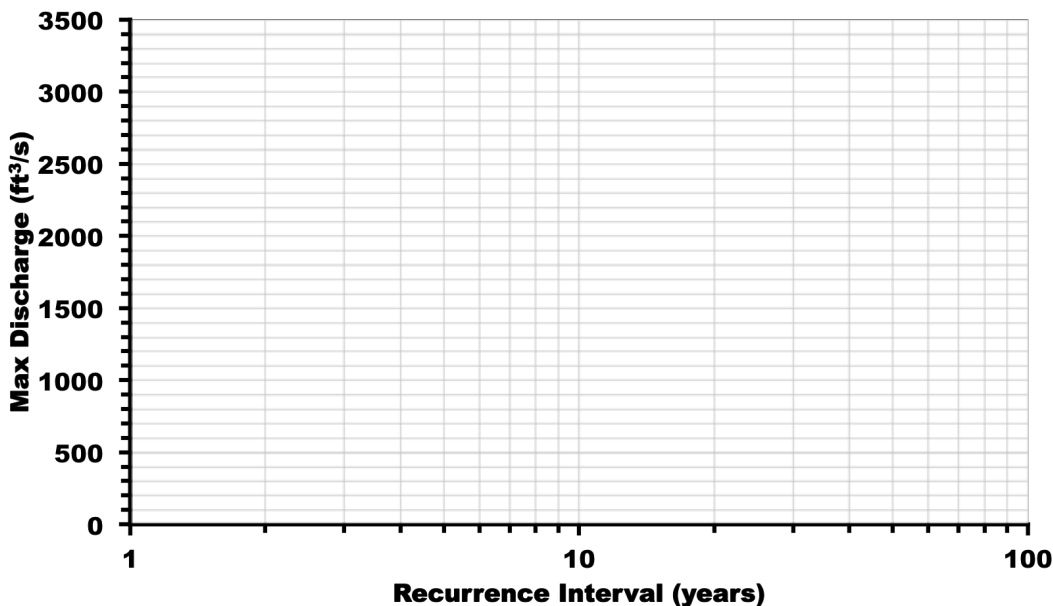
**RI** = the recurrence interval for a flood

**N** = the number of years that records have been kept for the stream

**m** = the rank of the maximum stream discharge per year

Year	Max Discharge (ft <sup>3</sup> /s)*	Rank	Recurrence Interval (years)
1980	800		
1981	1080		
1982	692		
1983	1380		
1984	1280		
1985	889		
1986	2030		
1987	890		
1988	1480		
1989	1600		
1990	1330		

\* A stream's flood discharge is simply the amount of water, measured in cubic feet per second (ft<sup>3</sup>/s), that passes a point on the stream during a flood; this amount is greater than the normal stream discharge.



(a) What would be the discharge during a 20-year flood?

(b) What would be the discharge during a 100-year flood?

(c) What is the recurrence interval for a flood with a discharge of 1500 cfs?

**Exercise 2: Floodplains**

(a) Draw a cross-section (side view) of a floodplain. Label the stream channel, floodplain, and stream terrace.

(b) List three reasons why living near a river (i.e., on the floodplain) might be attractive for a community.

- 
- 
- 

(c) Why might living on a floodplain be a bad idea?

**Exercise 3: Natural Levees**

(a) Draw a diagram showing the formation of a natural levee.

(b) what are advantage(s) of man-made levees?

(c) what are disadvantage(s) of man-made levees?

## Critical Response Paper: Tom Regan's "The Case for Animal Rights"

Due:

Length: Roughly 3 pages (length may vary)

At this point in the semester, we've developed a number of skills which should now all be utilized in writing this paper. Here are the most relevant:

- Identification of an author's main conclusion
- Accurate reconstruction of the author's argument for that conclusion
- Objective evaluation of the author's argument in terms of (as the case may be) validity, soundness, strength, cogency, etc.
- Awareness and avoidance of one's own preexisting cognitive biases

In this short paper, you have a very focused goal, namely: to identify Tom Regan's main moral claim that he's trying to substantiate; to identify and clarify his core argument for that claim; and to give your evaluation and argument for whether his argument is successful. We'll be discussing his paper and these guidelines in our meeting on\_\_\_\_\_.

### *The Guidelines*

Each of the following tasks should be executed in your paper.

1. Have an introductory paragraph in which you introduce:
  - a. the broader topic under consideration
  - b. the main author and title you'll be discussing
  - c. your eventual thesis/conclusion. For this paper, your thesis will be either that Regan's argument for animal rights succeeds or that it fails.
2. To broaden the theoretical discussion, before addressing Regan's main argument you should first address the following points:
  - a. Regan considers and rejects several ethical theories about ethics in general and about animal treatment in particular: indirect-duty views, contractarianism, the "cruelty-kindness" view, and Utilitarianism. For each of those views: first, articulate the view; and second, state Regan's main reason for rejecting it as inadequate.
  - b. Instead of the above theoretical approaches, Regan advocates what he calls the "rights view." Explain: first, what that view is; and second, Regan's main reasons for why it's the superior approach to ethics.
3. Now accurately and fairly reconstruct Regan's argument for animal rights. In doing so, make sure to state the scope of the argument's conclusion regarding the extent of our moral obligations to animals.
4. Now logically evaluate Regan's argument: assess it with the vocabulary and tools of logic and critical thinking that we've developed so far in the course. In other words, you should be thinking in terms of whether his argument (as reconstructed in step 3 above) is deductive or inductive, valid, sound, etc. On that note, you'll want to consider whether the main premises (or "reasons") he gives in his argument are true or false. Does he rely on any unstated or unsubstantiated assumptions? Etc.
5. Based on step 4, you will now draw your final conclusions about the strength of Regan's overall case for animal rights. As indicated above (1c), your final conclusion should concern whether, according to your analysis, Regan succeeds or fails in making his case. This final phase of your paper should include:
  - a. your argument(s) for your final conclusion(s).
  - b. a clear, logical justification for any failures you that attribute to Regan's argument.

## Appendix A

### Torques, Equilibrium, and Center of Mass

**Some Theory:** Torque is defined as force times length of lever arm. If an object is not rotating, then the sum of the torques acting on the object must be zero. In this case we say that the object is in static equilibrium.

This lab will serve as an introduction to hypothesis testing. The tests you'll use are given in the procedure below, so all you have to do is make predictions based on your overall hypothesis and see how well the predictions match your results. (In two labs in Physics II, you'll develop procedures to test your hypotheses.)

Note: 1) Use meters and kilograms for all measurements.

2) In all cases,  $x$  should be measured from the zero end of the meter stick.

3) The length  $l$  of each lever arm will be  $|x - x_0|$  where  $x_0$  is the center of mass of the meter stick.

4) Obtaining a perfect balance may be difficult. If the meter stick refuses to remain level, record the value that seems to work best.

#### Equipment:

Meter Stick (Non-Metal End)

Knife Edge Clamps – 3 with hooks and one without

Torque Balance

Hooked Masses

Beam Balance

Metal Cylinder

String

#### Procedure:

1) Read all three cases below. Then briefly state a hypothesis about torque and equilibrium that's general enough to cover all three cases. Using mathematical notation is a good idea.

2) Measure and record the mass of the three clamps with hooks ( $C_{1-3}$ ). Remember which clamp is which.

3) Measure and record the mass of a 50 g mass, a 100 g mass, and a 200 g mass (to make sure they're correct).

$C_1 =$  \_\_\_\_\_ 50 g mass = \_\_\_\_\_

$C_2 =$  \_\_\_\_\_ 100 g mass = \_\_\_\_\_

$C_3 =$  \_\_\_\_\_ 200 g mass = \_\_\_\_\_

4) Insert your meter stick through the hookless clamp and position it on the torque balance so that the zero end is to the left. Make sure the screw knob on that clamp is downward to lower the center of gravity and make the apparatus more stable.

5) Find the exact center of mass of the meter stick by finding the balance point. Record this position as  $x_0 =$  \_\_\_\_\_ and tighten the clamp at that position.

#### CASE I:

a) Hang the 50g mass at  $x_1 = 30.0$  cm and the 100 g mass at  $x_2 = 20.0$  cm. Use your hypothesis to mathematically predict the position  $x_3$  where a 200 g mass will balance the system.

Predicted  $x_3 =$  \_\_\_\_\_

b) Find and record the position  $x_3$  where a 200 g mass balances the system.

c) Record  $M_1 = C_1 + 50$  g mass,  $M_2 = C_2 + 100$  g mass, and  $M_3 = C_3 + 200$  g mass.

$x_1 = .300$  m     $l_1 =$  \_\_\_\_\_     $M_1 =$  \_\_\_\_\_     $F_1 =$  \_\_\_\_\_

$x_2 = .200$  m     $l_2 =$  \_\_\_\_\_     $M_2 =$  \_\_\_\_\_     $F_2 =$  \_\_\_\_\_

$x_3 =$  \_\_\_\_\_     $l_3 =$  \_\_\_\_\_     $M_3 =$  \_\_\_\_\_     $F_3 =$  \_\_\_\_\_

d) What should you calculate to determine how close your result was to your prediction? How close was it?

#### CASE II:

a) With the meter stick balanced attach the first clamp at  $x_1 = 40.0$  cm and suspend the 50 g mass from it.

b) Tie a loop at the end of a piece of string so that the loop will fit around the meter stick. Securely tie the other end of the string to the metal cylinder. Make sure that the string is short enough so that the cylinder does not hit the table when the string is looped around the meter stick.

c) Use the cylinder with the string attached to find and record the position  $x_2$  that balances the system.

d) Record  $M_1 = C_1 + 50$  g mass. Calculate  $l_1$  and  $F_1$ .

$x_1 = .400$  m     $l_1 =$  \_\_\_\_\_     $M_1 =$  \_\_\_\_\_     $F_1 =$  \_\_\_\_\_

$x_2 =$  \_\_\_\_\_     $l_2 =$  \_\_\_\_\_     $M_c =$  \_\_\_\_\_

e) Use your hypothesis to mathematically predict the mass ( $M_m$ ) of the cylinder.

Predicted  $M_m =$  \_\_\_\_\_

f) Use a balance to find the measured mass ( $M_m$ ) of the cylinder (and string).

$M_m =$  \_\_\_\_\_

g) Using the same method as in Case I, how close did your prediction come to the measured mass?

#### CASE III

a) Measure the mass of the meter stick = \_\_\_\_\_.

b) Reposition the center clamp so that  $x_0 = 35.0$  cm. Use your hypothesis to mathematically predict the point  $x_1$  at which you can hang the 100 g mass from the first clamp so it will balance the system.

Predicted  $x_1 =$  \_\_\_\_\_.

c) Using the first clamp and the 100 g mass, find and record the position  $x_1$  that balances the system.

$x_1 =$  \_\_\_\_\_.

d) Using the same method as in Case I, how close did your prediction come to your measured result?

Conclusion: Did your measurements confirm your hypothesis? What were sources of error? How could you improve this experiment as a way of testing your hypothesis?

## Appendix B

### Centripetal Force

If no net force acts upon a moving object, it will travel in a straight line with no change in speed. To cause an object to travel in a circular path, a force constantly perpendicular to the direction of motion must act upon the object. This force, called the centripetal force, will therefore always be directed toward the center of the circle.

#### Equipment

Glass Tube	String (Nylon or kite)
Rubber Stopper (Holed)	Hooked Masses
Stopwatch	Digital Balance

#### Procedure

*Express all of your masses in kilograms and distances in meters.*

1) Measure and record the mass of the rubber stopper. Call it  $m_s$ .

2) Pass the free end of the string through the glass tube. Tie the stopper to the end that's next to the smoother end of the tube, and adjust the string so that the stopper will travel in a circular path with a radius of 80 cm. This distance should be measured from the axis of the glass tube to the center of the stopper. Using a pen or marker, mark spots on the string 1 cm directly above and 1 cm directly below the tube. Cut the string so roughly 30 cm comes out of the other end of the tube. Make a small loop on the cut end so that the weight will hang in that loop.

Hang a 50 g mass from the loop. Practice whirling the stopper in a circular horizontal path above your head. It is important that the tube move as little as possible. The stopper is traveling at the desired speed when the weight force due to the hooked mass just barely supplies the centripetal force needed for the stopper to maintain a circular path of radius 80.0 cm. This will happen only if the glass tube stays between the two marks on the string. When the stopper is moving with the desired rotational speed, measure the time it takes the stopper to complete exactly 10 revolutions. Record this time. Calculate the average linear speed,  $v$ , of the stopper.

3) Now hang 100 g worth of mass from the loop. Measure and record the time for exactly 10 complete revolutions and calculate the average linear speed of the stopper.

4) Now hang 200 g worth of mass from the loop. Measure and record the time for exactly 10 complete revolutions and calculate the average linear speed of the stopper.

5) a) Determine the weight of the hanging mass in 2). b) Determine  $m_s a_c$  for the stopper in 2). c) Theoretically, these two values should be the same. Why? d) Calculate the percent difference between these two values.

6) Instead of repeating the above calculation for the other two trials, let's look at all the data together. a) Write an equation in terms of the two masses, the radius  $r$ , and the linear speed of the stopper that says the weight of the hanging mass should equal  $m_s a_c$  for the stopper. b) Plug in  $m_s$  and  $r$  to get an equation relating  $m_h$  and  $v$ , and solve it for  $m_h$ . You should find that  $m_h$  is proportional to  $v^2$ .

7) Now use a computer to graph your results. The instructions here pertain to Excel, a spreadsheet program available on the computers in the physics lab and many others. However, if you know how to graph your numbers with different software, you may do that. If you decide to use Excel but no one in your group has used it before, I'll be glad to help you.

a) Start Excel (you may have to get through a start-up menu—just choose the defaults) and click "Blank Workbook".

b) Square your numbers for  $v$  and enter the values of  $v^2$  in column A, starting in cell A1. (The cells are the little rectangles.) Here and in every data-entry step, check that you've entered your numbers correctly. These numbers will be the  $x$  coordinates of your graph. (For those who know how to calculate the squares with Excel, you can do that if you want.)

c) Enter your numbers for  $m_h$  in column B, with each  $m_h$  next to the corresponding  $v^2$ . These numbers will be the  $y$  coordinates of your graph.



d) Highlight the numbers you've entered by dragging from the middle of A1 to your last entry in column B. All your numbers should be in a highlighted rectangle. You're now ready to graph them.

e) Click on the INSERT tab at the top. From "Charts", choose the one with x and y axes. (Excel calls this a Scatter chart.) Click the downward-pointing triangle and choose the Scatter chart that has no curves connecting the points. A graph of your data should show up on your screen.

f) Graphs should always be properly labeled. Click on the words "Chart Title" and replace them with a title that briefly explains what your graph is. Then click on "Add Chart Element" at the upper left, or on the + sign next to the upper right corner of the chart, and choose "Axis titles". Label each axis with what it shows, including the units.

g) Use Excel to determine the slope of the line by the method called linear regression. Choose "Add Trendline". Choose the option "Linear". Also choose "Display Equation on Chart". (You may have to scroll down in the box with the options to see that.) You should see an equation of the form  $y = mx + b$ , or in terms of our variables,  $m_h = mv^2 + b$ . Record the slope,  $m$ . Its units are  $\text{kg} \cdot \text{s}^2/\text{m}^2$ .

8) Find the percent error of your experimental slope from the slope of the theoretical equation you calculated in step 6.

9) Save your spreadsheet and e-mail it to [gerald.friedman@sfcc.edu](mailto:gerald.friedman@sfcc.edu), or print it and hand it in with your lab. You only need to hand in one copy for the group.

9) Discuss sources of error for the experiment.

10) Considering the equation you found in step 6, if you doubled the mass of the hanging weight, by what factor would you theoretically have to increase the speed of the stopper?

11) Did you divide the work in this lab by having each member of your group do different tasks or by having some members do all of one task, such as whirling the stopper or timing? How did you make those decisions?

Extra Credit (This has to do with material we'll cover on Thursday.)

Venus travels around the sun in a nearly circular orbit with an average radius of  $1.08 \times 10^{11}$  m. The mass of Venus is  $4.87 \times 10^{24}$  kg and its orbital period is 224.7 days. The mass of the sun is  $1.99 \times 10^{30}$  kg. a) Using Newton's law of gravity, determine the force of gravity that the sun exerts on Venus. b) Determine the force of gravity that Venus exerts on the sun. c) Determine the speed of Venus as it travels around the sun from its radius and period, and calculate  $mv^2/r$  for Venus. d) Find the percent difference between your answer in a) and your answer in c).

e) What do you think this is supposed to show?

**Appendix C**  
**Algebra-based Physics I**  
**Final Exam**

Some parts of problems on this test depend on answers to earlier parts. If you can't do an early part, you can still answer later parts in terms of the missing quantity. For instance, you could get full credit for an answer like " $y/(7.3\text{ s})$ ", where  $y$  was the answer to the previous part".

1. "When I see birches bending left and right,/ I like to think some boy's been swinging them..." (Robert Frost). An imaginary boy of mass 45 kg swings up and down on the tip of a birch tree, making a complete swing every 2.5 s.

a) What is the spring constant of the tree?

b) Assuming that this swinging motion makes sound waves, what is their wavelength? (Too low-pitched to hear, of course.) Use 340 m/s for the speed of sound.

2. In an ice-skating competition, a pair performs a "detroit". The man holds the woman over his head; she's lying on her back on his hands. In this position, she can be approximated as a uniform plank of mass 57.0 kg and length 1.65 m. The man's right hand is 0.750 m from the woman's feet and exerts an upward force of 300 N. How much force does the man's left hand exert?

3. On the afternoon of January 15, 1919, an unusually warm day in Boston, a cylindrical metal tank used for storing molasses ruptured. Molasses flooded into the streets in a 9-meter-deep stream, killing pedestrians and horses and knocking down buildings. The molasses had a density of  $1.60 \cdot 10^3 \text{ kg/m}^3$ , and the tank was 27.4 m high and 27.4 m in diameter. If the tank was full before the accident, what was the gauge pressure at the average height, that is, halfway up?

4. A U.S. one-cent coin has a diameter of 1.9000 cm at  $20.0^\circ\text{C}$ . It's made of a metal alloy (mostly zinc) whose coefficient of linear expansion is  $2.6 \cdot 10^{-5} (^\circ\text{C})^{-1}$ . What would its diameter be on a cold night in the mountains of Greenland ( $T = -53.0^\circ\text{C}$ )?

5. A snowflake with a mass of 0.00150 kg is at a temperature of  $-5.00^\circ\text{C}$ . How much heat is required to melt it?

6. A snowboarder with a mass of 80.0 kg (including clothes and equipment) jumps into the air. If he had a speed of 5.00 m/s when he took off and reached a height of 1.05 m above the take-off point, what was his speed at maximum height?

7. His little sister ( $m = 40.0 \text{ kg}$ ) is riding on a sled down a  $36.9^\circ$  incline. Her acceleration is  $5.75 \text{ m/s}^2$ . a) How strong is the frictional force on the sled?

b) What is the coefficient of friction between the snow and the sled?

8. A heat pump (which is like a refrigerator) operates between the outdoors ( $-6.00^\circ \text{ C}$ ) and a room ( $21.0^\circ \text{ C}$ ). a) What is the ideal (Carnot) coefficient of performance in this situation?

b) If the actual COP is 6.50, how much heat is transferred to the room when the heat pump does 100 J of work (that is, uses 100 J of electricity)?

Extra Credit (2 points): How fast is the girl in 7 going after 2.00 s, starting from rest?

Data for water:  $L_v = 2256 \text{ kJ/kg}$ ,  $L_f = 333 \cdot 10^3 \text{ J/kg}$ ,  $c_{\text{liquid}} = 4186 \text{ J/kg}\cdot^\circ\text{C}$ ,  
 $c_{\text{ice}} = 2108 \text{ J/kg}\cdot^\circ\text{C}$

5. What is the speed of the bird in Exercise 2.4?
6. Acceleration is the change in velocity over time. Given this information, is acceleration a vector or a scalar quantity? Explain.
7. A weather forecast states that the temperature is predicted to be  $-5^{\circ}\text{C}$  the following day. Is this temperature a vector or a scalar quantity? Explain.

### 2.3 Time, Velocity, and Speed

8. Give an example (but not one from the text) of a device used to measure time and identify what change in that device indicates a change in time.
9. There is a distinction between average speed and the magnitude of average velocity. Give an example that illustrates the difference between these two quantities.
10. Does a car's odometer measure position or displacement? Does its speedometer measure speed or velocity?
11. If you divide the total distance traveled on a car trip (as determined by the odometer) by the time for the trip, are you calculating the average speed or the magnitude of the average velocity? Under what circumstances are these two quantities the same?
12. How are instantaneous velocity and instantaneous speed related to one another? How do they differ?

### 2.4 Acceleration

13. Is it possible for speed to be constant while acceleration is not zero? Give an example of such a situation.
14. Is it possible for velocity to be constant while acceleration is not zero? Explain.
15. Give an example in which velocity is zero yet acceleration is not.
16. If a subway train is moving to the left (has a negative velocity) and then comes to a stop, what is the direction of its acceleration? Is the acceleration positive or negative?
17. Plus and minus signs are used in one-dimensional motion to indicate direction. What is the sign of an acceleration that reduces the magnitude of a negative velocity? Of a positive velocity?

### 2.6 Problem-Solving Basics for One-Dimensional Kinematics

18. What information do you need in order to choose which equation or equations to use to solve a problem? Explain.
19. What is the last thing you should do when solving a problem? Explain.

### 2.7 Falling Objects

20. What is the acceleration of a rock thrown straight upward on the way up? At the top of its flight? On the way down?
21. An object that is thrown straight up falls back to Earth. This is one-dimensional motion. (a) When is its velocity zero? (b) Does its velocity change direction? (c) Does the acceleration due to gravity have the same sign on the way up as on the way down?
22. Suppose you throw a rock nearly straight up at a coconut in a palm tree, and the rock misses on the way up but hits the coconut on the way down. Neglecting air resistance, how does the speed of the rock when it hits the coconut on the way down compare with what it would have been if it had hit the coconut on the way up? Is it more likely to dislodge the coconut on the way up or down? Explain.
23. If an object is thrown straight up and air resistance is negligible, then its speed when it returns to the starting point is the same as when it was released. If air resistance were not negligible, how would its speed upon return compare with its initial speed? How would the maximum height to which it rises be affected?
24. The severity of a fall depends on your speed when you strike the ground. All factors but the acceleration due to gravity being the same, how many times higher could a safe fall on the Moon be than on Earth (gravitational acceleration on the Moon is about  $1/6$  that of the Earth)?
25. How many times higher could an astronaut jump on the Moon than on Earth if his takeoff speed is the same in both locations (gravitational acceleration on the Moon is about  $1/6$  of  $g$  on Earth)?

### 2.8 Graphical Analysis of One-Dimensional Motion

26. (a) Explain how you can use the graph of position versus time in Figure 2.54 to describe the change in velocity over time. Identify (b) the time ( $t_a$ ,  $t_b$ ,  $t_c$ ,  $t_d$ , or  $t_e$ ) at which the instantaneous velocity is greatest, (c) the time at which it is zero, and (d) the time at which it is negative.



## Appendix E

### Sample Quantitative Reasoning question

Is the solution to this problem correct? If not, what are the errors?

Q: A tetherball is hit so it moves at constant speed in a circle of radius 1.20 m in 0.800 seconds. What is its acceleration?

A: We use  $x = x_0 + v_0 t + \frac{1}{2} a t^2$ . Assuming the tetherball starts from rest,  $v_0 = 0$  and we have

$$a = \frac{2x}{t_0^2}, \text{ so } a = 3.75 \text{ m/s}^2.$$

The answer is that the solution is incorrect because the equation used applies only to constant acceleration, not to uniform circular motion. The correct equation is  $a = v^2/r$ . Also, the speed is constant, so  $v_0 \neq 0$ .

### Sample Sustainability question

What source of energy would you like to see emphasized more in the future? Explain, using at least one fact that was not mentioned in class.

Scoring: Out of 10 points, 2 for naming any energy source, 4 for giving its advantages correctly at the level of the course, 4 for the additional fact.



## **Psychology 111 Self-Change Project Spring 2018**

We all have something we would like to change in ourselves. Perhaps we are beset by a bad habit, such as chewing our nails, overeating, smoking, drinking, spending too much time on the phone, impulse buying, negative thinking, losing our temper, procrastinating, not getting enough exercise, using profanity, etc. Or, perhaps there is something we would like to improve in ourselves, such as increasing our study time, eating "right," being more patient, taking time to write, taking better notes, spending less money, exercising, etc. The list is potentially endless--think about it--you'll come up with something.

Now here is your chance to help yourself while learning something about human learning and behavior management. Once completed, successfully or not, you should have an appreciation for how to apply behavioral techniques to yourself.

### **An 8 Step Procedure for behavior modification**

**STEP 1:** Select a problem you wish to work on and then decide if the problem is worth working on.

What behaviors or thinking do you wish to change? What behaviors or thinking do you want to occur more often? What behaviors or thinking would you like to do less often? In what situations does the problem occur? How often does the behavior or thinking occur? How do you feel about the problem?

Is this problem worth the time and effort it will take to bring about a change? Changing behavior and thinking is not easy and will involve both time and effort. What will you gain if you can change your behavior or thinking? What negative things happen if you don't change?

**STEP 2:** Write down tentative goals (your target behavior).

- State your goals as specifically as possible (use specific behaviors).
- Divide any complex goals into smaller goals.
- Specify how you will measure the accomplishment of your goal.

**STEP 3:** Learn to become a self watcher by gathering data about your problem.

- Read what psychologists have written about the behavior or thinking you wish to change.
- Ask your family and friends for their observations of your behavior or thinking.
- Start keeping a written record of your own behavior or thinking.
  1. Develop a method which allows you to record in all situations as soon as the behavior or thinking occurs.
  2. Gather enough baseline data to be able later to notice a change.



**STEP 4:** Analyze your observations and brainstorm possible solutions.

Analyze the ABCs (antecedents, behaviors, and consequences)

- Antecedents: What are the antecedents? In what ways can you modify old antecedents? In what ways can you arrange new antecedents? Under what circumstances does the undesired behavior or thinking occur? What happens just before the undesired behavior or thinking? What seems to be the cues for the behavior or thinking to occur? Are there any regularities in your data?
- Behaviors: How often does the behavior or thinking occur? How long does it last? In what ways can you substitute new thoughts and behaviors for previous thoughts and behaviors?
- Consequences: What positive things (reinforcers) occur immediately after the behavior or thinking? What long term reinforcers are missed because the undesired behavior or thinking occurs? Were there any unpleasant consequences? In what ways can you use others to dispense reinforcers?

Brainstorm possible solutions.

**STEP 5:** Design a comprehensive plan to solve your problem.

- Reword your final goal into specific and measurable terms. State your goals to increase some behavior rather than decrease a behavior or thought.
- Start small and start gradually. Divide your final goal into several smaller goals. Work on one goal at a time
- Use what you have learned from your self-watching.
- Gain control over the antecedent cues (cues that occur before the behavior).
- Avoid situations in which the undesired behavior or thinking occurs.
- Avoid the troublesome parts of such situations.
- Put yourself in situations in which the desired behavior or thinking.
- Develop responses which remove the cues from you.

Learn new behaviors

- Through imitation (sometimes called modeling).
- Through shaping.
- Through doing incompatible responses.
- Through rehearsing (practicing).

- Disrupt the chain of behavior
- Break the chain at a weak point, usually early in the sequence.
- Interrupt the chain to record an observation.
- Change the chain of behaviors.
- Rearrange the consequences
- Build in powerful immediate reinforcers for the desired behavior or thinking.
- Decrease the reinforcers for the undesired behavior.
- Work on revising your thinking (self-instruction) about your problems.
- Write out your plan.
- Post your plan so your family and friends can see your contract.
- Plan to enlist the help of others in helping you carry out your plan.

**STEP 6:** Put your plan into action.

**STEP 7:** Evaluate and revise your plan (adjust your plan).

**STEP 8:** Develop a plan to maintain the changes you have produced.

- Many behaviors and thoughts, once changed, will need periodic monitoring.
- Some behaviors and thoughts, once changed, may start weakening if not monitored and reinforced.
- Plan to watch and support your changes.

**STEP 9:** Design an ABA graph to visually represent your progress.

**FORMAT:** 5-7 double-spaced pages, excluding graph and other supporting materials.

PLAN DUE : Monday March 22

PROGRESS REPORT DUE: Monday April 13

COMPLETED PROJECT DUE : Wednesday May 5

Rubric for assessment of “killing the Buddha” lab

Number of groups assessed =

Enter the number of groups that fall into each category.

Essential Skill: Social and personal responsibility	Unacceptable	Acceptable	Target
Civic discourse	Data clearly contradicts plausible (but incorrect) idea but group reports consistency with incorrect idea.	Data of insufficient quality to disprove plausible (but incorrect) idea and group reports appropriate conclusion.	Data clearly contradicts plausible (but incorrect) idea and group reports failure of plausible idea.

## How does the Period of a Pendulum Depend on Amplitude?

### INTRODUCTION

In 1624 Galileo published *Dialogues Concerning Two New Sciences*, in which he presented many of his ideas and discoveries concerning physics and astronomy. In this book, he makes the following statement about the period of the simple pendulum:

"I never dreamed of learning that one and the same body when suspended from a string a hundred cubits long and pulled aside through an arc of 90 degrees or even 1 degree or 1/2 degree would employ the same time in passing through the largest of these arcs ... each pendulum has its own time of vibration so definite and determinate that it is not possible to make it move with any other period than that which nature has given it

... if two persons start to count the vibrations, the one the large, the other the small, they will discover that after counting tens and even hundreds that they will not differ by a single vibration, not even a fraction of one ... This observation justifies ... the following proposition ... namely, that vibrations of very large and small amplitude all occupy the same time."

Galilei, G. *Dialogues Concerning Two New Sciences*, translated by H. Crew and A. de Salvio, Dover 1954. pp 97,254-55.

Put briefly, Galileo's assertion is this: the period (time for one complete swing) of the simple pendulum is independent of the arc through which it swings. The purpose of this lab is to test this assertion experimentally.

### EXPERIMENTAL METHOD

Measure the period for four different amplitudes ( $\approx 10^\circ$ ,  $\approx 30^\circ$ ,  $\approx 45^\circ$ ,  $\approx 80^\circ$ ). Time single swings, not 10 repetition, since the larger amplitude motions decay rapidly with repetition. Perform each measurement five times. Calculate and plot the data.

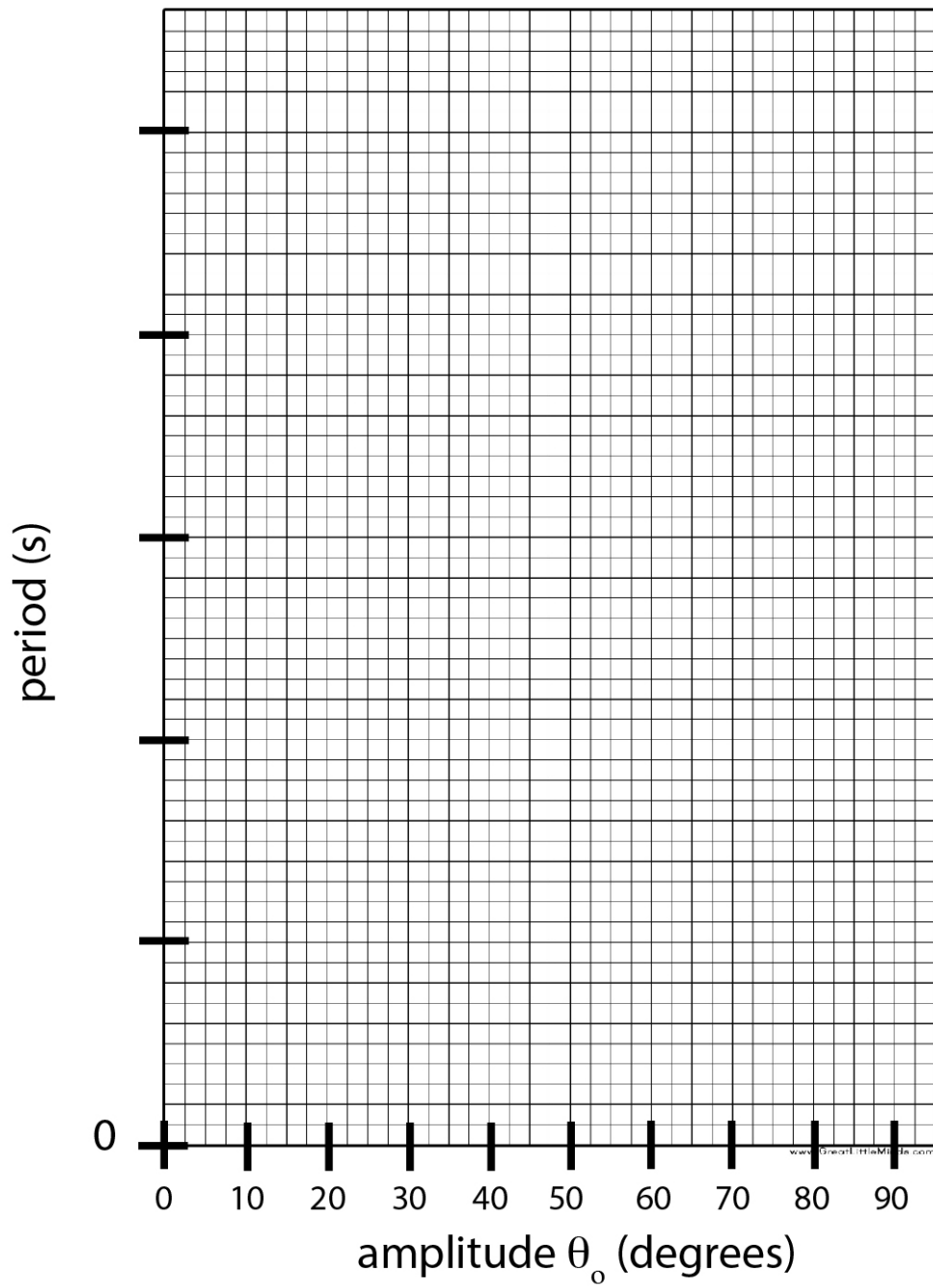
### INTERPRETATION

Answer the question: Are your data consistent with Galileo's proposition that the pendulum period does not depend on the amplitude? Briefly explain how your data lead you to your conclusion.

# DATA

Length (cm)	Period 1 (s)	Period 2 (s)	Period 3 (s)	Period 4 (s)	Period 5 (s)	Mean period (s)	SDM period (s)
10°							
30°							
45°							
80°							

# Dependence of period on amplitude



## ACTIVITY #1

### "PROPERTIES OF WATER"

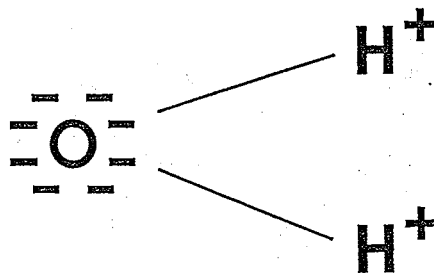
In this Activity you will investigate some of the physical properties of water. A more thorough discussion of water's characteristics can be found in your textbook.

#### HYDROGEN BONDS

When two hydrogen atoms react with an oxygen atom to form water, there is an *unequal sharing* of electrons among the atoms. This creates a slightly negative charge on the side of the water molecule that has more of the "electron cloud."

Water molecules act like a bunch of magnets holding on to each other by the attractions between the + and - ends.

The force created by those attractions is called a **hydrogen bond**, and it is the secret to all of water's special properties.



#### ? QUESTION

1. As water falls from the clouds, what force keeps the water in drops?
2. In order for the liquid water to evaporate and become steam, heat must be added. In a pan of boiling water, what bond is being broken by the heat of the stove?
3. So, if heat is required to evaporate water, then what is released when water condenses?
4. On a calm, but rainy day, the temperature rises slightly when it starts to rain. Explain.

#### WATER ADHESION

**Adhesion** occurs when two or more different substances are stuck together as if by glue. Water has some interesting adhesion properties.

#### GO GET



1. A small container of water.
2. An eyedropper.
3. Four microscope slides.

## NOW

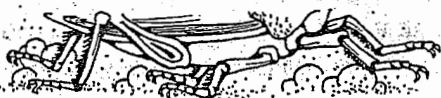
1. Put several drops of water on one slide, then place the other slide directly on top of the wet slide.
2. Try to pull apart the glass slides *without* sliding them past each other.
3. Repeat this experiment with the two dry slides.

## ? QUESTION

1. How strong is the force of attraction between the two dry slides?
2. How strong is the force of attraction between the two wet slides?
3. What is the name of the force that holds the two slides together?
4. A freeze-dried anchovy is fairly easy to break between your fingers. Yet, when the fish is allowed to sit in water for a while, it only bends with the same effort. Explain.
5. Based on your answer to #4, what is one important role of water in living organisms?

## CAPILLARITY

### GO GET

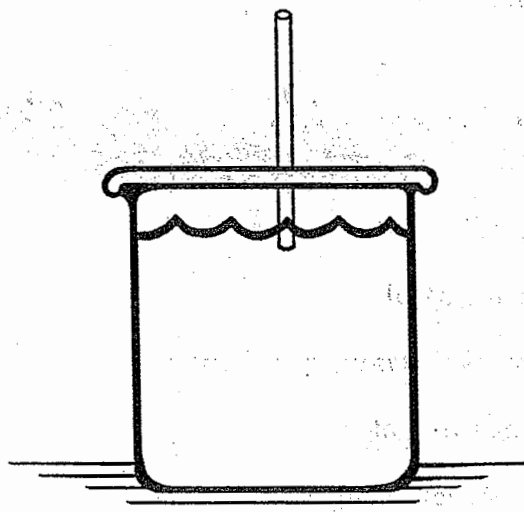


1. A glass capillary tube.
2. A small container of water.

## NOW

Hold the capillary tube vertically between your fingers, and put the bottom end just below the surface of the water.

The process you have just observed is called **capillarity**.





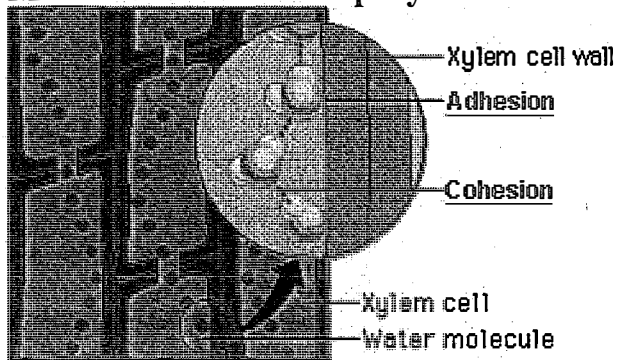
## ? QUESTION

### Capillarity

1. What happened when you did this experiment?
2. Draw a simple sketch of the results.
3. Explain your results. What is it about water that makes it do this? (Be specific about the forces of attraction.)
4. How is this property of water important to plants?

|

## Movement of Water Up Xylem Vessels

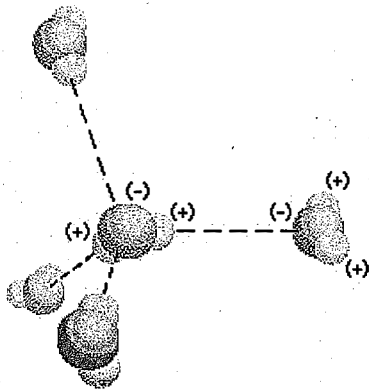


When water enters the roots, hydrogen bonds link each water molecule to the next so the molecules of water are pulled up the thin xylem vessels like beads on a string. The water moves up the plant, enters the leaves, moves into air spaces in the leaf, and then evaporates (transpires) through the stomata (singular, stoma).

## Hydrogen Bonding

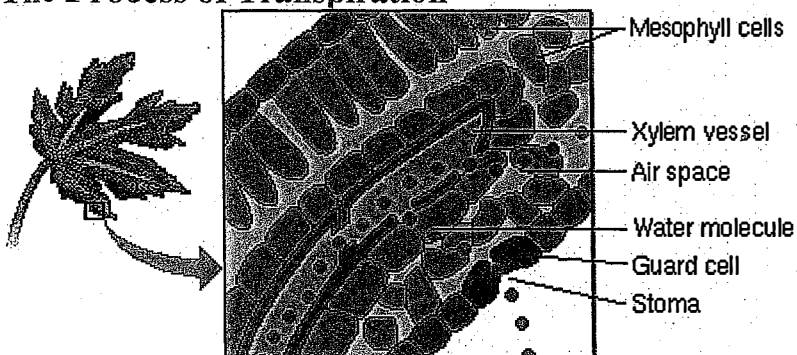
Recall that a hydrogen bond is a weak interaction between a hydrogen atom of one molecule and, in this case, the oxygen of another molecule.

Water is a polar molecule, with the region around the oxygen atom having a slight negative charge and the regions around the hydrogen atoms having a slight positive charge. In water, the negative regions on one molecule are attracted to the positive regions on another, and the molecules form hydrogen bonds.



Notice in the figure above that each water molecule can form four hydrogen bonds. In liquid water, the average lifetime of a hydrogen bond is very short. However, the cumulative effect of hydrogen bonding among molecules makes liquid water much more cohesive than other liquids.

## The Process of Transpiration

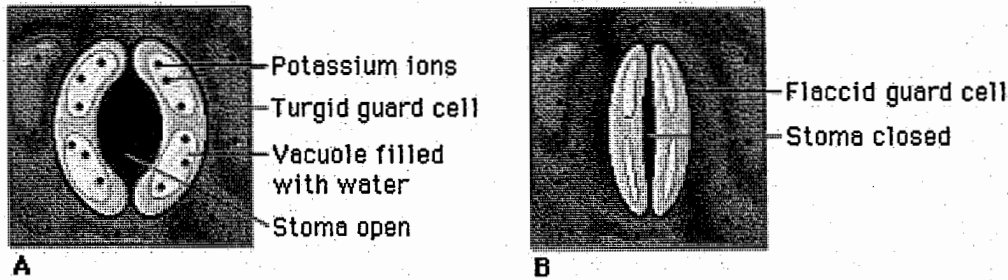


There are hundreds of stomata in the **epidermis** of a leaf. Most are located in the lower epidermis. This reduces water loss because the lower surface receives less solar radiation than the upper surface. Each stoma allows the carbon dioxide necessary for **photosynthesis** to enter, while water evaporates through each one in transpiration.

Now that you have been introduced to the concept of transpiration, the questions on the following page will help you understand how the properties of water and water potential are important to this process.

### How Do Guard Cells Function?

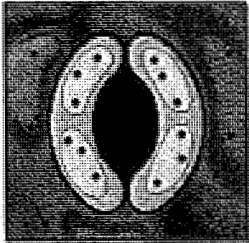
**Guard cells** are cells surrounding each stoma. They help to regulate the rate of transpiration by opening and closing the stomata. To understand how they function, study the following figures. As you look at the figures, keep in mind that an increase in solute concentration lowers the water potential of the solution, and that water moves from a region with higher water potential to a region of lower water potential.



Notice that in figure A the guard cells are turgid, or swollen, and the stomatal opening is large. This turgidity is caused by the accumulation of  $K^+$  (potassium ions) in the guard cells. As  $K^+$  levels increase in the guard cells, the water potential of the guard cells drops, and water enters the guard cells.

In figure B, the guard cells have lost water, which causes the cells to become flaccid and the stomatal opening to close. This may occur when the plant has lost an excessive amount of water. In addition, it generally occurs daily as light levels drop and the use of  $CO_2$  in photosynthesis decreases.

### Guard Cell Function



#### *Stomatal closing*

Potassium ions move out of the vacuole and out of the cells.  
Water moves out of the vacuoles, following potassium ions.  
The guard cells shrink in size.  
The stoma closes.

#### *Stomatal opening*

Potassium ions move into the vacuoles.  
Water moves into the vacuoles, following potassium ions.  
The guard cells expand.

## ACTIVITY #3

### "HOW TO SOLVE GENETIC PROBLEMS"

#### USING LETTERS FOR ALLELES

For convenience, the genes of an allele pair are usually symbolized by a letter from the alphabet. A *large* letter is used for the dominant trait and a *small* letter for the recessive trait. When we want to describe the *genotype* of an organism, we use both letters to represent the alleles inherited from the parents.

For example, free earlobes is a dominant allele and attached earlobes is recessive. You would use a capital "F" to indicate the dominant allele and a small "f" to indicate the recessive allele in describing an individual.

#### ? QUESTION

- Write the three genotypes for earlobe attachment as it applies to the following individuals.
  - Heterozygous \_\_\_\_\_
  - Homozygous Dominant \_\_\_\_\_
  - Homozygous Recessive \_\_\_\_\_
- When it comes to symbolizing incomplete dominance with letters, it is best to use the letter "C" for one allele and "C'" for the other allele.

List the three possible genotypes for hair type.

- Curly \_\_\_\_\_
  - Wavy \_\_\_\_\_
  - Straight \_\_\_\_\_
- Why not use a small letter "c" for the heterozygous genotype?

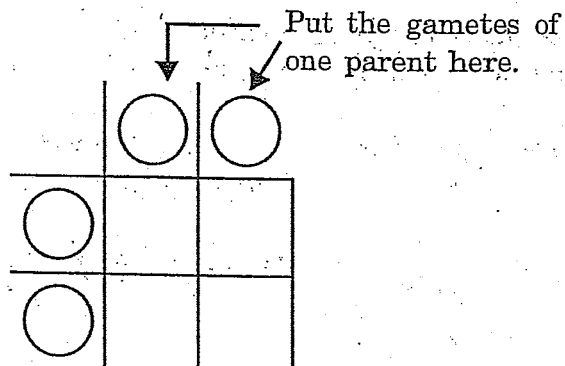
#### USING THE PUNNETT SQUARE

The *Punnett Square* is a method of predicting the probable outcome of genetic crosses.

#### STEP 1

Draw a square like this:

Put the gametes of the other parent here.



**STEP 2**

Determine what kinds of gametes are made by each parent in the cross, and put those gametes into the boxes of the Punnett Square.

If your mate is heterozygous (Ff), then those gametes are (F) and (f).

	(f)	
(f)		
(F)		

For example, if you are homozygous recessive for attached earlobes (ff), then all of your gametes are (f).

**STEP 3**

Fill in the offspring boxes of the Punnett Square.

In this example there are only two possible offspring genotypes. The Punnett Square tells us to expect about 50% ff and 50% Ff.

Sometimes the Punnett Square is more complex than this and you must figure out more than one trait at a time. Nevertheless, you use the same basic method.

	(f)	
(f)	ff	
(F)	Ff	

? ... fill in this box with another small (f)?

**NOW**

Make up your own genotype example and work out the crosses.

1. Traits:

2. Symbols:

3. Male Genotype:

4. Female Genotype:

5. Offspring Genotypes:


Punnett Square

## ACTIVITY #4

### "GENETIC PROBLEMS"

#### CASES OF COMPLETE DOMINANCE

1. Gregor Mendel grew different varieties of pea plants in his garden. When he crossed yellow-seed plants with green-seed plants, he always got yellow pea seeds.

- What is the dominant allele?
- What is the genotype of all green-seed plants?
- Use the Punnett Square to show Mendel's cross.
- Do the parent yellow-seed plants have the same genotype as the offspring yellow-seed pea plant?

Parent: \_\_\_\_\_ Offspring: \_\_\_\_\_

- What genetic fact do you know about any yellow-seed pea plant?
- If yellow-seed pea plants are dominant to green-seed pea plants, why are there mostly green pea seeds in nature?

2. A dark-eyed man mates with a light-eyed woman and they have ten dark-eyed children.

- What is the dominant allele?
- What is the genotype of all light-eyed people?

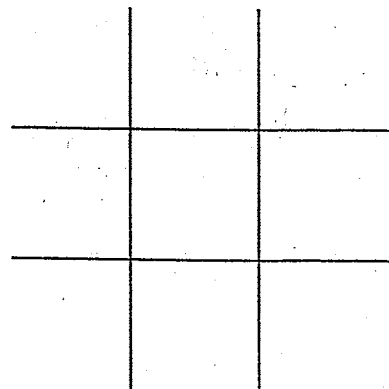
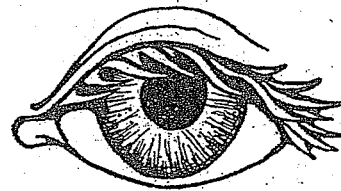
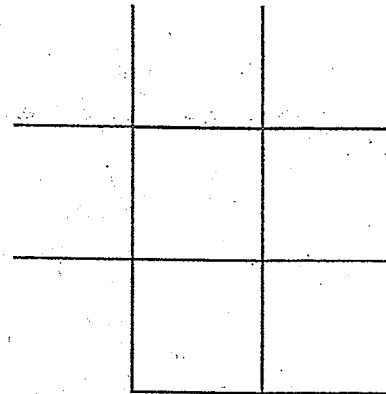
- What are the genotypes of the two parents?

\_\_\_\_\_ and \_\_\_\_\_

- What is the genotype difference between the dark-eyed parent and the dark-eyed offspring?

Parent: \_\_\_\_\_ Offspring: \_\_\_\_\_

- When two heterozygous dark-eyed people ( $Dd$ ) are crossed, what is the *phenotype* ratio of dark-eyed offspring to light-eyed offspring? (Use the Punnett Square to get your answer.)

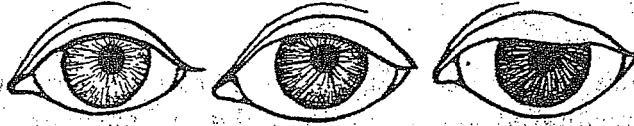


## A SPECIAL NOTE ON EYE COLOR

Eye color is probably due to multiple alleles and more than one gene pair. The numerous phenotypes are determined by genes that control both the *amount* and the *distribution* of a dark pigment called **melanin**. Except for albinos, everyone has some eye pigmentation.

Eye color is determined mainly by the location of melanin in the iris of the eye. Concentrated melanin particles appear as brown; dilute melanin particles appear as yellow or yellow-brown.

### VARIOUS EYE COLORS



**Blue:** no melanin in the front part of the iris. The color is due to minimal amounts of melanin in the rear of the iris with the clear front portion scattering the light reflected off the melanin. This scattering is greatest in the blue spectrum giving the iris its blue color.

**Grey:** the same as blue, but with a slight amount of melanin in the front of the iris which tones down, or greys, the blue reflected from behind.

**Green:** a bit more melanin particles scattered in the front part of the iris create yellow. Blended with the light blue from the rear of the iris, it produces an overall green color.

**Hazel:** even more melanin particles in the front of the iris give a slight brown color, and dilute melanin particles scattered throughout the iris add some yellow.

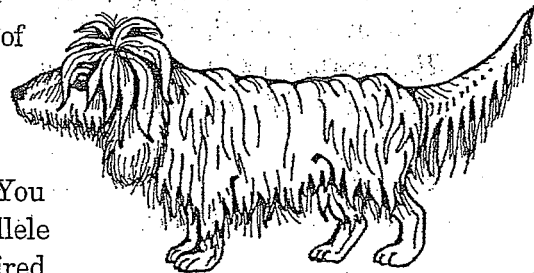
**Brown:** melanin particles in the front part of the iris and throughout the iris. The amount of melanin varies, leading to gradations of brown color in the eye.

**Black:** large amounts of melanin in the front and throughout the iris.

### TEST CROSS TO CHECK GENOTYPE

If an organism shows the dominant phenotype, then one of its genes has to be the dominant allele, but you cannot be sure of the identity of the other allele unless you do a **test cross** to see if the dominant parent breeds pure.

Let's pretend that you are in the dog-breeding business. You know that long hair on a "pooch hound" is a dominant allele and short hair is recessive. You purchase a male long-haired "pooch hound." How do you figure out if your male "pooch hound" is homozygous or heterozygous for long hair? Which genotype of female should you breed him to?



If a proper test cross is used, what phenotypes of puppies would you see if your male dog is heterozygous dominant? \_\_\_\_\_

What puppy phenotypes would you see if your male dog is homozygous dominant? \_\_\_\_\_ Complete the Punnett Square to show the test cross that would convince someone that your "pooch hound" is homozygous for long hair.

Male Genotype: \_\_\_\_\_ Female Genotype: \_\_\_\_\_


## CASES OF INCOMPLETE DOMINANCE

1. When a straight-haired mouse is crossed with a curly-haired mouse, the result is always wavy hair. Two wavy-haired mice cross.



- What are the genotypes of the two wavy-haired mice? \_\_\_\_\_
- Draw the Punnett Square of a cross between two wavy-haired mice, and show the probable genotypes of their offspring.


- c. What is the expected *phenotype* ratio of the offspring?

\_\_\_\_\_ %      \_\_\_\_\_ %      \_\_\_\_\_ %

- d. What is the expected *genotype* ratio of the offspring?

2. Red orchids with straight petals are crossed with white orchids with curly petals. The results are pink orchids with wavy petals.



- a. What are the genotypes of the two parent orchid plants?

**Remember:** You are dealing with *two different* traits.

First parent:    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_  
                                  (color)           (shape)

Second parent: \_\_\_\_\_

- b.** What is the genotype of the offspring orchids?

Offspring: \_\_\_\_\_



## ACTIVITY #5

### "SEX-LINKED TRAITS"

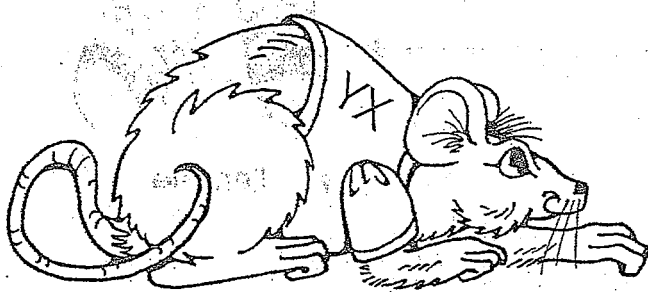
#### SEX DETERMINATION

Humans have 23 homologous pairs of chromosomes. Twenty-two of these pairs are named using the numbers 1 through 22. The 23rd pair is individually labeled with the letters "X" and "Y" for males, and "X" and "X" for females. These labels distinguish them as the *sex chromosomes*.

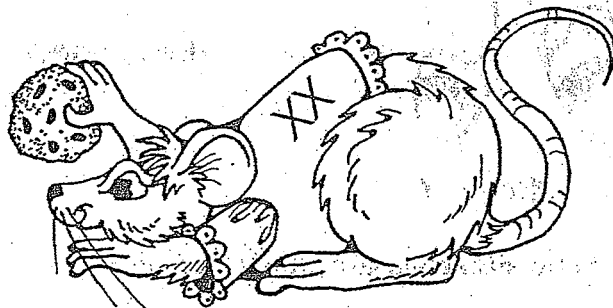
During meiosis in the male two types of sperm are produced: those carrying the X and those carrying the Y chromosome. Females produce eggs carrying only the X chromosome.

If a Y chromosome is present in the cells of an embryo, then the child becomes a male. If the Y is not present, the child becomes a female. It is the presence or absence of the Y chromosome that determines the sex of a child!

This means that a male child receives a Y chromosome from his father and an X chromosome from his mother. A female child receives an X chromosome from her father and the other X chromosome from her mother.



$Y + X = \text{Male}$



$X + X = \text{Female}$

#### ? QUESTION

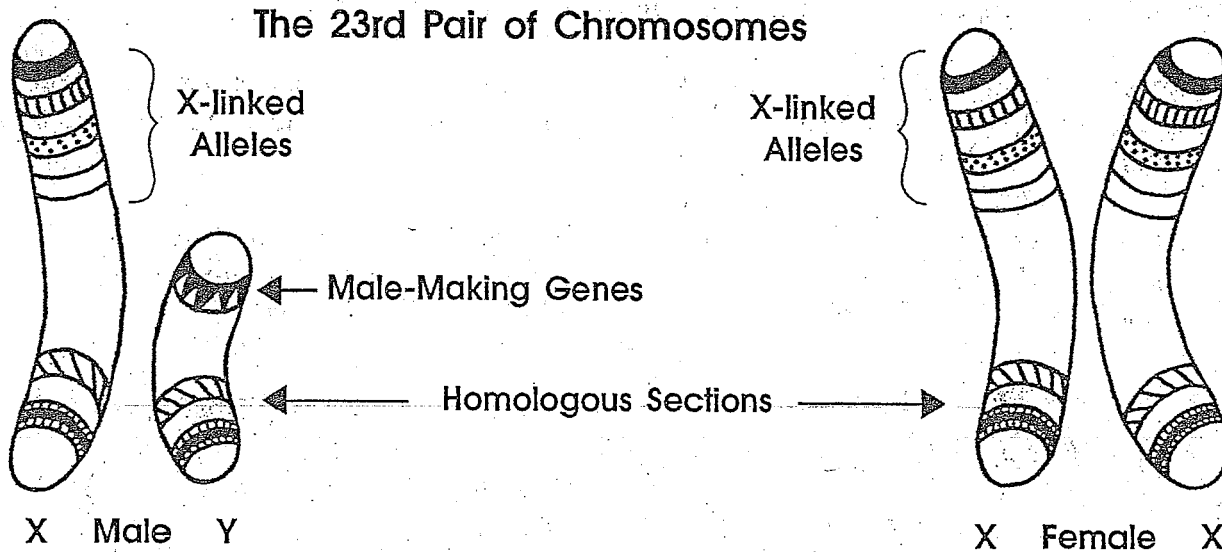
Draw a Punnett Square to show a cross of X and Y chromosomes in the fertilization of male and female gametes.

The offspring boxes should reveal why we have about a 50% male to 50% female ratio within the human population.


## SEX-LINKAGE

The X and Y chromosomes are not exactly identical, and we should expect that there would be differences in how each of them carries genes. These differences are expressed in the unequal frequencies of phenotypes in the male and female offspring.

If any phenotype is distributed *unequally* between male and female offspring, and those differences are due to X and Y chromosome differences, then we call those traits **sex-linked**. Actually, "sex-linked" means that the gene is carried on the X chromosome and not on the Y chromosome. We would call these genes **X-linked**. It is easier to understand sex-linkage by looking at the sex chromosomes.



Two genetic situations are illustrated above.

**First:** There is a homologous section of the X and Y chromosomes that is the same, and there will be no differences in phenotype between male and female children.

**Second:** Notice that the Y chromosome is very short. We would expect it to lack some of the genes that are carried on the X chromosome. There is an X-linked section on the X chromosome that carries genes that are *missing* from the Y chromosome.

### ? QUESTION

1. How many copies of an X-linked gene does a male have? \_\_\_\_\_
2. Will a male be able to give X-linked genes to his daughter? \_\_\_\_\_ Explain.
3. Will a male be able to give X-linked genes to his sons? \_\_\_\_\_ Why or Why not?

4. How many copies of an X-linked gene does a female have? \_\_\_\_\_
5. A male child gets X-linked genes from which of his parents? \_\_\_\_\_
6. A female child gets X-linked genes from which of her parents? \_\_\_\_\_
7. If a father is carrying an X-linked allele, then how many of his sons will get that allele? \_\_\_\_\_

How many of his daughters will get that allele? \_\_\_\_\_

8. If a mother has a defective X-linked allele on one of her chromosomes and the other chromosome is normal, then how many of her sons will get that defective allele? \_\_\_\_\_

Will any of her daughters get the defective allele? \_\_\_\_\_ How many? \_\_\_\_\_

9. If we found that none of the daughters actually showed the defective phenotype, then how could we explain it?

### TIPS FOR SOLVING SEX-LINKED GENETIC PROBLEMS

There is a sex-linked gene on the X chromosome that causes a disorder called *hemophilia*, where the blood fails to clot properly when a person is injured. This disorder is recessive and can be symbolized by the small letter "n." Normal blood clotting is dominant and can be symbolized by the capital letter "N."

In sex-linked cases we not only use letters to symbolize the genes, but also include the X or Y chromosome to indicate gender and to follow the sex chromosomes into the next generation.

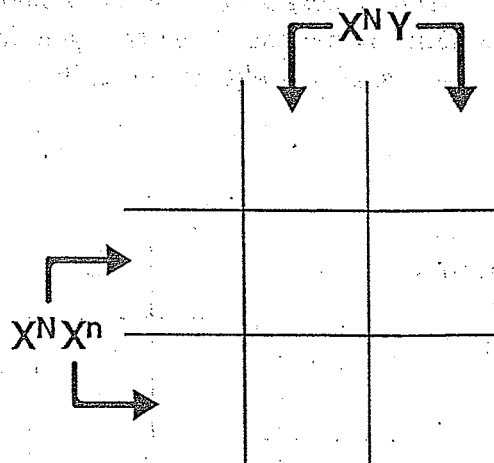
Using these symbols we would indicate a female who is heterozygous for clotting as  $X^N X^n$ .

A homozygous female for normal clotting would be  $X^N X^N$ .

A hemophilic male would be  $X^n Y$ .

We would diagram a Punnett Square of a cross between a heterozygous female and a normal clotting male like this:

Complete the Punnett Square showing the offspring.



## ? QUESTION

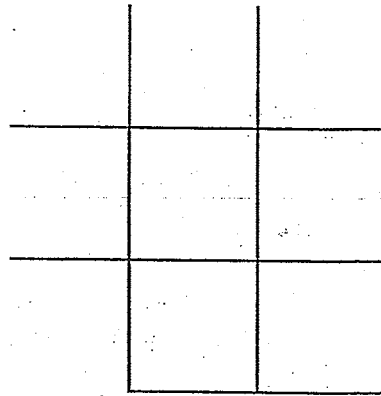
1. Looking at the Punnett Square you just completed, answer the following questions.

- What is the genotype for the female parent? \_\_\_\_\_
- What is the genotype for the male parent? \_\_\_\_\_
- What are the genotypes for their offspring? \_\_\_\_\_
- What are the chances that any child will be a hemophiliac? \_\_\_\_\_
- Is it the father or the mother that passes the hemophilia gene to the male child?  
\_\_\_\_\_

2. Failure to distinguish between red and green colors is a recessive allele and is a sex-linked gene carried on the X chromosome.

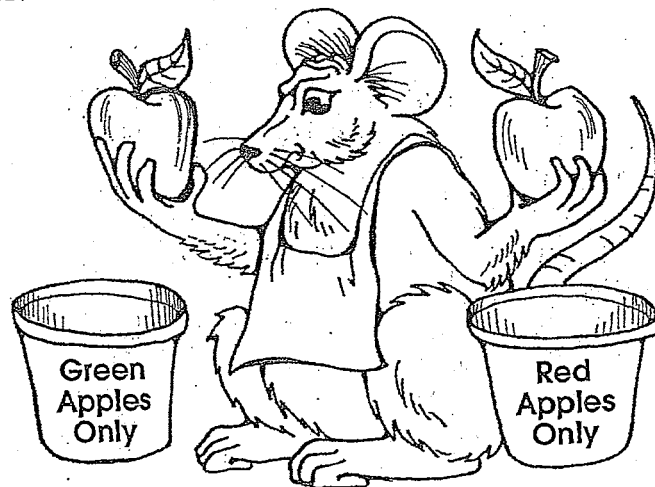
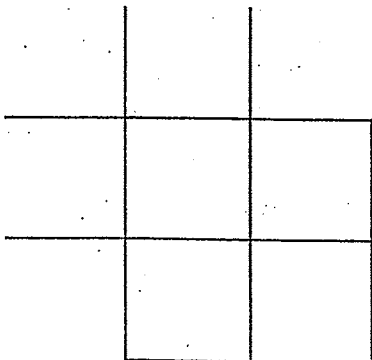
A red-green color-blind male mates with a normal female. Of their six children (four boys and two girls), all have normal vision.

- What is the most probable genotype of the mother? \_\_\_\_\_
- Will any of the male children pass this disorder on? \_\_\_\_\_ Explain.
- Draw a Punnett Square of this cross to prove your answers.



3. A normal-visioned female gave birth to a color-blind daughter. Her husband has normal vision. He claims that the child is not his. Does the genetic information indicate that someone else is the child's father?

Explain and prove your answer using a Punnett Square.



## ACTIVITY #5

### "ONION ROOT TIP"

It's time to review what you learned in Activity #4.

You will use a microscope to find the various phases of mitosis (cell division) in the root tip of an onion. Put on your investigator's hat and search for the "clues" that reveal each phase.



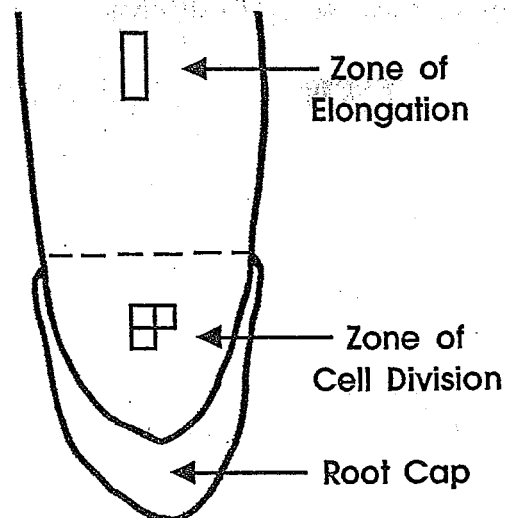
#### GO GET

1. A compound microscope.
2. A prepared slide of an onion root tip.

#### NOW

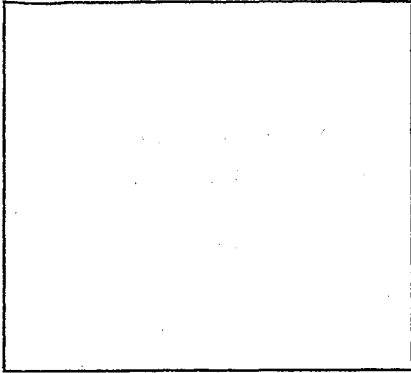
1. Under low power, note that the root tip is covered by a root cap (like a thimble over your finger). Behind the root cap is an area of square-shaped cells that are undergoing cell division.
2. Look at this area under the high power (430x). If the cells are *rectangular*, then you are in the wrong place.
3. Find every stage of mitosis.

Onion Root Tip

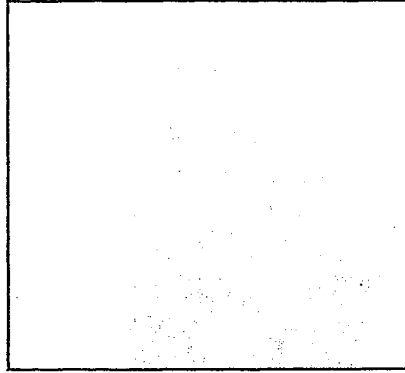


4. Draw a simple sketch of what you see at each phase of mitosis.

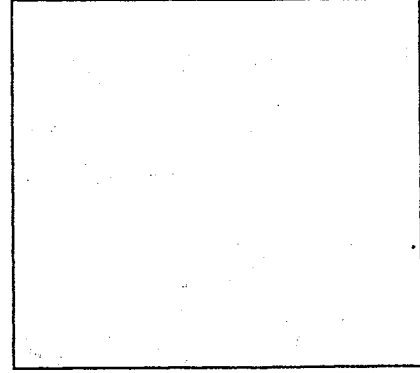
Interphase\*



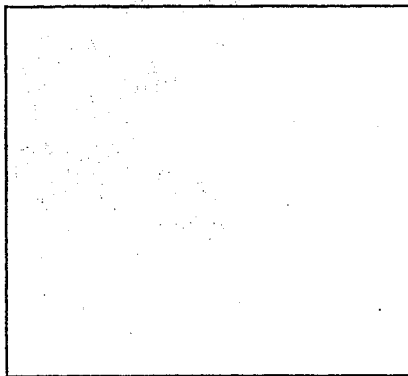
Prophase



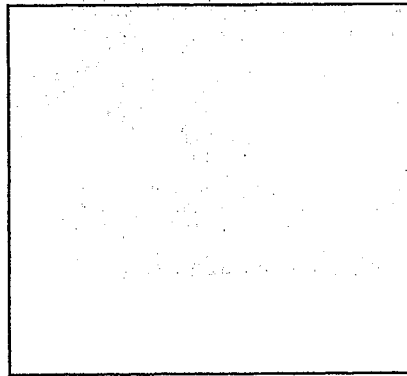
Metaphase



Anaphase



Telophase



\* Interphase will look like a stained nucleus. You won't be able to see the DNA threads.

5. There is a way that you can estimate the relative amount of time that a cell spends in each phase of the cell cycle. Count all of the cells in the zone of cell division and record how many of them are in each phase. Then figure what percent each stage is of the total. This is an indication of the relative time a cell spends in each stage of cell division. Does this make sense to you? Do it, it will.

<u>Phase</u>	<u># of Cells in Phase</u>	<u>% of Total Cells</u>
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**BIOL 1140L: Rubric for Attendance / Interactive Participation**  
**Student can earn up to 4 points per lab**

<b>component</b>	<b>max. # points earned</b>	<b>Exceptions for additional penalty</b>
<b>ready to start on time</b>	1 of 4 points	-late more than 15 minutes -leaving before their group is finished.
<b>appropriate/safe dress for lab</b>	1 of 4 points	-if unsafe, student cannot stay and do lab.
<b>positive interaction / teamwork</b> (sharing/respect/ethics, etc.) <b>+ instructor check-off at end.</b>	1 of 4 points	-determined by Instructor observation during the lab.
<b>participation in interactive collaboration / assisting others with concepts</b>	1 of 4 points	-determined by Instructor observation during the lab.
<b>if absent for the day</b>	<b>no points earned,</b> (student did not do above.)	---

## Clovis Community College

### Core Competencies Assessment 2019-2020—Area V: Humanities and Fine Arts

**Class: HIST 2145 American Military History**

**Faculty:**

**Common Core No.: HIST 2145**

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
<p><b>1. Students will analyze and critically interpret significant and primary texts and/or works of art (this includes fine art, literature, music, theatre, and film.)</b></p> <p>For all Humanities and Fine Arts Competencies, students should: Possess an understanding of the present that is informed by an awareness of past heritages in human history, arts, philosophy, religion, and literature, including the complex and interdependent relationships among cultures.</p> <p>Note: For the purposes of the Humanities and Fine Arts requirement, courses will come from the areas of History, Philosophy, Literature, Art, Dance, Music, Theatre and those offerings from other disciplines that also include, among other criteria, analytical study of primary texts and /or works of art as forms of cultural and creative expression. This requirement does not include work in areas such as studio and performance courses or courses that are primarily skills-oriented. The requirements must be fulfilled by courses from two different disciplines.</p>	<p>Students in online and face-to-face HIST 2145 are required to take objective midterm and final exams that contain an array of multiple-choice and essay questions that align with one or all of the four categories and elements that comprise the State of New Mexico core competencies for HIST. 2145 in the area of Humanities and Fine Arts. The pedagogical basis for questions focus upon course readings, written document analysis assignments, and a range of visual content elements including PowerPoint presentations and video documentaries and narratives. The thematic concentration of the material particularly focus upon ideas and traits related to social institutions, internal and external factors that influence the development of the United</p>		



<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
	States Military, its traditions, and its place in American life and the social, economic, political, and cultural institutions of the nation from its development in the colonial period through the present day.		
2. Students will compare art forms, modes of thought and expression, and processes across a range of historical periods and/or structures (such as political, geographic, economic, social, cultural, religious, and intellectual).	See the procedural description listed above.		
3. Students will recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives.	See the procedural description listed above.		
4. Students will draw on historical and/or cultural perspectives to evaluate any or all of the following: contemporary problems/issues, contemporary modes of expression, and contemporary thought.	See the procedural description listed above.		

*All class assessment forms are due to your division chair by June 30 or as designated by the Division Chair.  
All assessments are due from the Division Chairs to the Assessment Committee Chair by July 30.*

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>
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Faculty Member Completing Assessment:

Date:

Reviewed by:  
(Division chair)

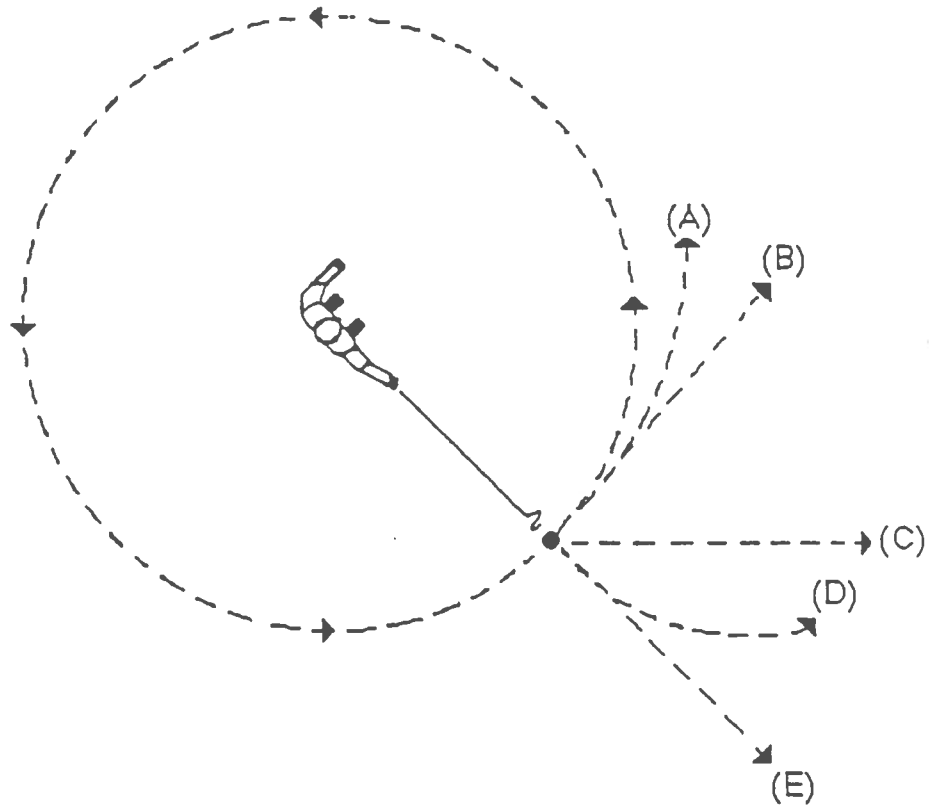
Date:

*All class assessment forms are due to your division chair by June 30 or as designated by the Division Chair.  
All assessments are due from the Division Chairs to the Assessment Committee Chair by July 30.*

## Force Concept Inventory

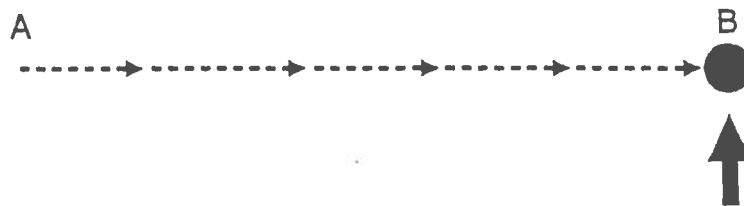
1. Two metal balls are the same size, but one weighs twice as much as the other. The balls are dropped from the top of a two story building at the same instant of time. The time it takes the balls to reach the ground below will be:
  - (A) about half as long for the heavier ball.
  - (B) about half as long for the lighter ball.
  - (C) about the same time for both balls.
  - (D) considerably less for the heavier ball, but not necessarily half as long.
  - (E) considerably less for the lighter ball, but not necessarily half as long.
2. Imagine a head-on collision between a large truck and a small compact car. During the collision,
  - (A) the truck exerts a greater amount of force on the car than the car exerts on the truck.
  - (B) the car exerts a greater amount of force on the truck than the truck exerts on the car.
  - (C) neither exerts a force on the other, the car gets smashed simply because it gets in the way of the truck.
  - (D) the truck exerts a force on the car but the car doesn't exert a force on the truck.
  - (E) the truck exerts the same amount of force on the car as the car exerts on the truck.
3. Two steel balls, one of which weighs twice as much as the other, roll off of a horizontal table with the same speeds. In this situation:
  - (A) both balls impact the floor at approximately the same horizontal distance from the base of the table.
  - (B) the heavier ball impacts the floor at about half the horizontal distance from the base of the table than does the lighter.
  - (C) the lighter ball impacts the floor at about half the horizontal distance from the base of the table than does the heavier.
  - (D) the heavier ball hits considerably closer to the base of the table than the lighter, but not necessarily half the horizontal distance.
  - (E) the lighter ball hits considerably closer to the base of the table than the heavier, but not necessarily half the horizontal distance.

4. A heavy ball is attached to a string and swung in a circular path in a horizontal plane as illustrated in the diagram below. At the point indicated in the diagram, the string suddenly breaks at the ball. If these events were observed from directly above, indicate the path of the ball after the string breaks.

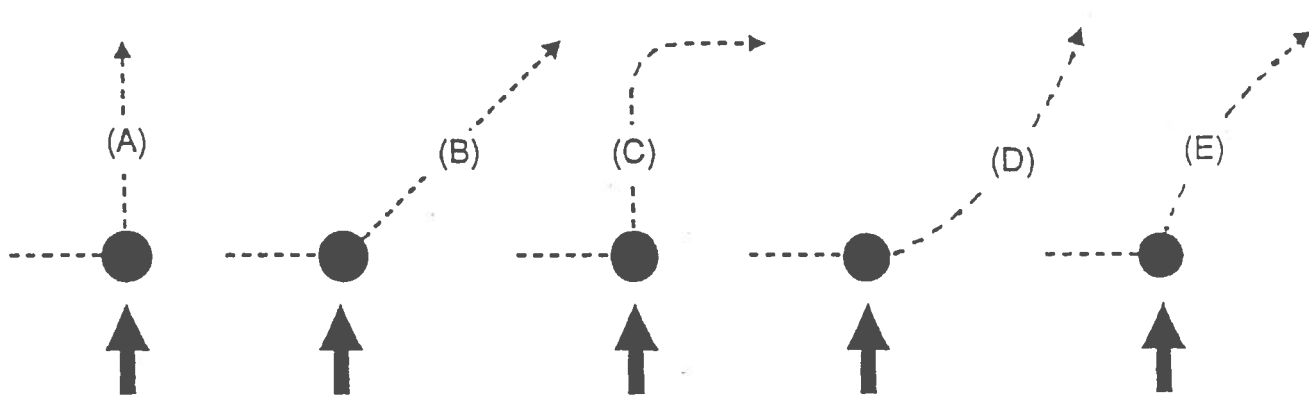


5. A boy throws a steel ball straight up. Disregarding any effects of air resistance, the force(s) acting on the ball until it returns to the ground is(are):
- (A) its weight vertically downward along with a steadily decreasing upward force.
  - (B) a steadily decreasing upward force from the moment it leaves the hand until it reaches its highest point beyond which there is a steadily increasing downward force of gravity as the object gets closer to the earth.
  - (C) a constant downward force of gravity along with an upward force that steadily decreases until the ball reaches its highest point, after which there is only the constant downward force of gravity.
  - (D) a constant downward force of gravity only.
  - (E) none of the above, the ball falls back down to the earth simply because that is its natural action.

- \* Use the statement and diagram below to answer the next four questions:
- \* The diagram depicts a hockey puck sliding, with a constant velocity, from point "A" to point "B" along a frictionless horizontal surface. When the puck reaches point "B", it receives an instantaneous horizontal "kick" in the direction of the heavy print arrow.

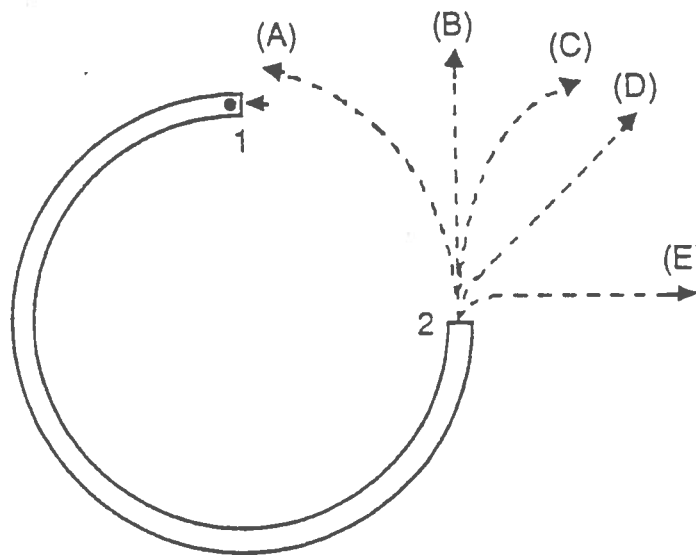


6. Along which of the paths below will the hockey puck move after receiving the "kick" ?

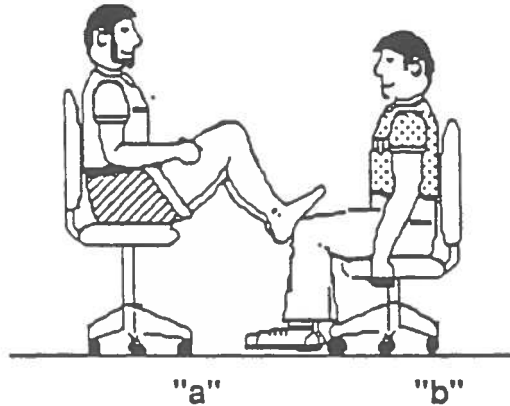


7. The speed of the puck just after it receives the "kick"?
- Equal to the speed " $v_0$ " it had before it received the "kick".
  - Equal to the speed " $v$ " it acquires from the "kick", and independent of the speed " $v_0$ ".
  - Equal to the arithmetic sum of speeds " $v_0$ " and " $v$ ".
  - Smaller than either of speeds " $v_0$ " or " $v$ ".
  - Greater than either of speeds " $v_0$ " or " $v$ ", but smaller than the arithmetic sum of these two speeds.
8. Along the frictionless path you have chosen, how does the speed of the puck vary after receiving the "kick"?
- No change.
  - Continuously increasing.
  - Continuously decreasing.
  - Increasing for a while, and decreasing thereafter.
  - Constant for a while, and decreasing thereafter.

9. The main forces acting, after the "kick", on the puck along the path you have chosen are:
- (A) the downward force due to gravity and the effect of air pressure.
  - (B) the downward force of gravity and the horizontal force of momentum in the direction of motion.
  - (C) the downward force of gravity, the upward force exerted by the table, and a horizontal force acting on the puck in the direction of motion.
  - (D) the downward force of gravity and an upward force exerted on the puck by the table.
  - (E) gravity does not exert a force on the puck, it falls because of the intrinsic tendency of the object to fall to its natural place.
10. The accompanying diagram depicts a semicircular channel that has been securely attached, in a horizontal plane, to a table top. A ball enters the channel at "1" and exits at "2". Which of the path representations would most nearly correspond to the path of the ball as it exits the channel at "2" and rolls across the table top.



- \* Two students, student "a" who has a mass of 95 kg and student "b" who has a mass of 77 kg sit in identical office chairs facing each other. Student "a" places his bare feet on student "b's" knees, as shown below. Student "a" then suddenly pushes outward with his feet, causing both chairs to move.



11. In this situation,

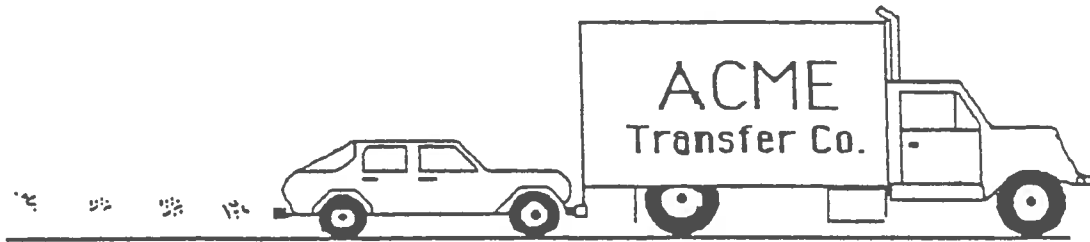
- (A) neither student exerts a force on the other.
- (B) student "a" exerts a force on "b", but "b" doesn't exert any force on "a".
- (C) each student exerts a force on the other but "b" exerts the larger force.
- (D) each student exerts a force on the other but "a" exerts the larger force.
- (E) each student exerts the same amount of force on the other.

12. A book is at rest on a table top. Which of the following force(s) is(are) acting on the book?

- 1. A downward force due to gravity.
- 2. The upward force by the table.
- 3. A net downward force due to air pressure.
- 4. A net upward force due to air pressure.

- (A) 1 only
- (B) 1 and 2
- (C) 1, 2, and 3
- (D) 1, 2, and 4
- (E) none of these, since the book is at rest there are no forces acting on it.

- \* Refer to the following statement and diagram while answering the next two questions.

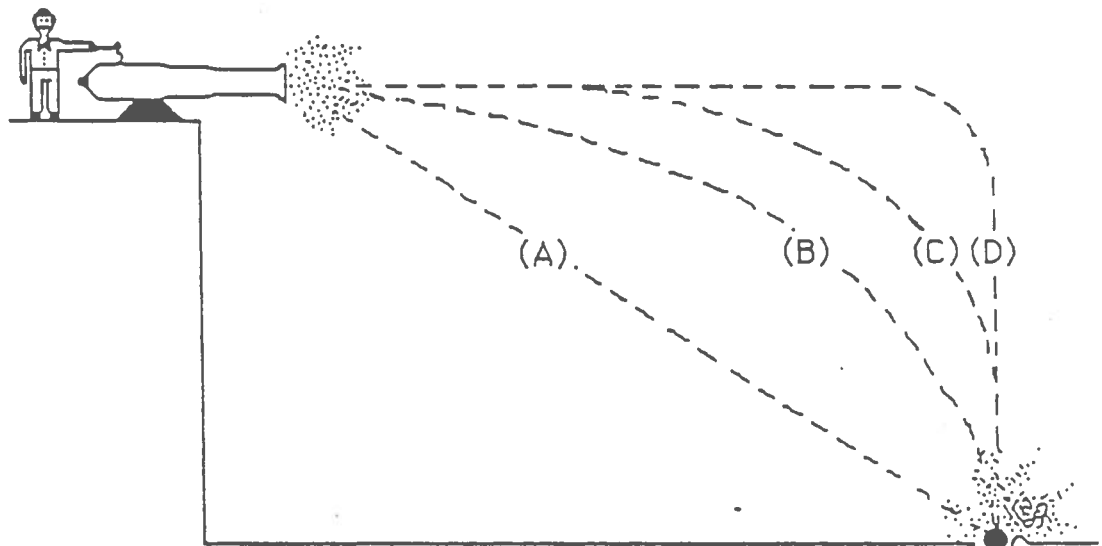


A large truck breaks down out on the road and receives a push back into town by a small compact car.

13. While the car, still pushing the truck, is speeding up to get up to cruising speed;
- (A) the force of the car pushing against the truck is equal in amount to that of the truck pushing back against the car.
  - (B) the force of the car pushing against the truck is less than that of the truck pushing back against the car.
  - (C) the force of the car pushing against the truck is greater than that of the truck pushing back against the car.
  - (D) the car's engine is running so it applies a force as it pushes against the truck but the truck's engine isn't running so it can't push back with a force against the car.
  - (E) neither the car nor the truck exert any force on the other, the truck is pushed forward simply because it is in the way of the car.
14. After the person in the car, while pushing the truck, reaches the cruising speed at which he/she wishes to continue to travel at a constant speed;
- (A) the amount of force of the car pushing against the truck is equal to that of the truck pushing back against the car.
  - (B) the amount of force of the car pushing against the truck is less than that of the truck pushing back against the car.
  - (C) the amount of force of the car pushing against the truck is greater than that of the truck pushing against the car.
  - (D) the car's engine is running so it applies a force as it pushes against the truck but the truck's engine is not running so it can't push back against the car, the truck is pushed forward simply because it is in the way of the car.
  - (E) neither the car nor the truck exert any force on the other, the truck is pushed forward simply because it is in the way of the car.



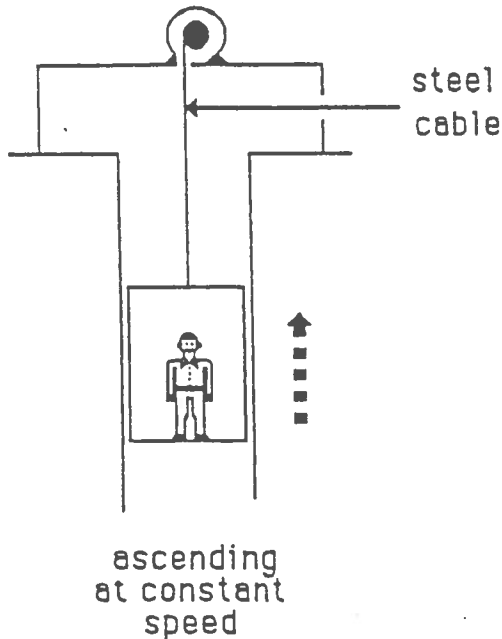
15. When a rubber ball dropped from rest bounces off the floor, its direction of motion is reversed because;
- (A) energy of the ball is conserved.
  - (B) momentum of the ball is conserved.
  - (C) the floor exerts a force on the ball that stops its fall and then drives it upward.
  - (D) the floor is in the way and the ball has to keep moving.
  - (E) none of the above.
16. Which of the paths in the diagram below best represents the path of the cannon ball?



17. A stone falling from the roof of a single story building to the surface of the earth;
- (A) reaches its maximum speed quite soon after release and then falls at a constant speed thereafter.
  - (B) speeds up as it falls, primarily because the closer the stone gets to the earth, the stronger the gravitational attraction.
  - (C) speeds up because of the constant gravitational force acting on it.
  - (D) falls because of the intrinsic tendency of all objects to fall toward the earth.
  - (E) falls because of a combination of the force of gravity and the air pressure pushing it downward.

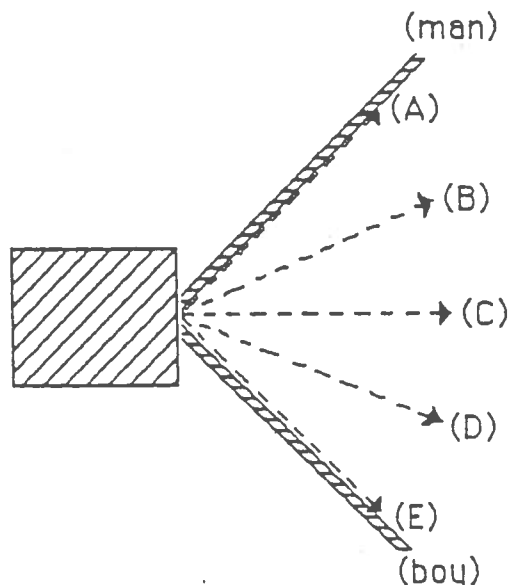
- \* When responding to the following question, assume that any frictional forces due to air resistance are so small that they can be ignored.

18. An elevator, as illustrated, is being lifted up an elevator shaft by a steel cable. When the elevator is moving up the shaft at a constant velocity:

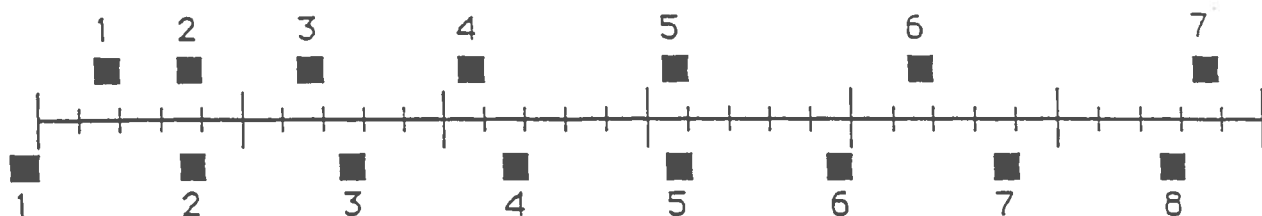


- (A) the upward force on the elevator by the cable is greater than the downward force of gravity.
- (B) the amount of upward force on the elevator by the cable is equal to that of the downward force of gravity
- (C) the upward force on the elevator by the cable is less than the downward force of gravity.
- (D) it goes up because the cable is being shortened, not because of the force being exerted on the elevator by the cable.
- (E) the upward force on the elevator by the cable is greater than the downward force due to the combined effects of air pressure and the force of gravity.

19. Two people, a large man and a boy, are pulling as hard as they can on two ropes attached to a crate, as illustrated in the diagram below. Which of the indicated paths (A-E) would most likely correspond to the path of the crate as they pull it along?

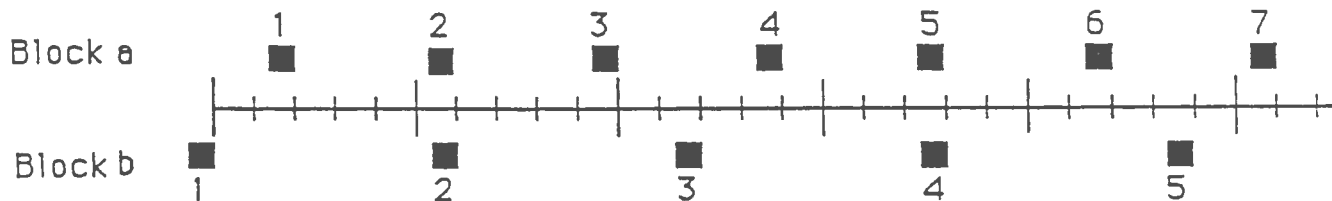


- \* The positions of two blocks at successive 0.20 second time intervals are represented by the numbered squares in the diagram below. The blocks are moving toward the right.



20. Do the blocks ever have the same speed?

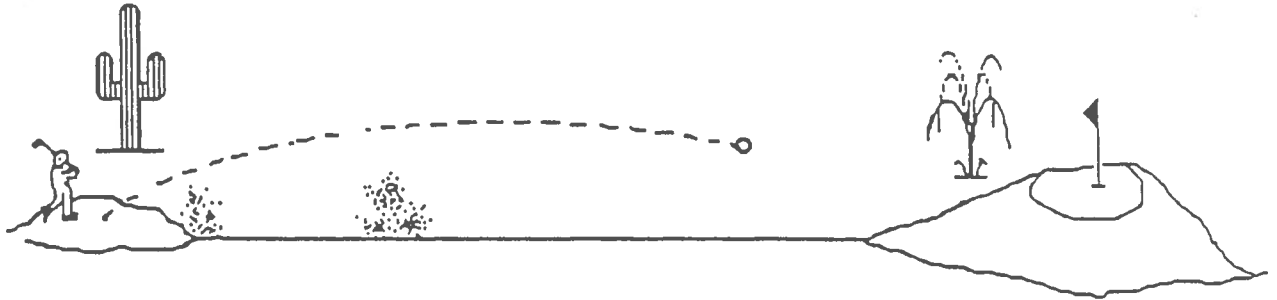
- (A) No.
  - (B) Yes, at instant 2.
  - (C) Yes, at instant 5.
  - (D) Yes, at instant 2 and 5.
  - (E) Yes, at some time during interval 3 to 4.
- \* The positions of two blocks at successive equal time intervals are represented by numbered squares in the diagram below. The blocks are moving toward the right.



21. The acceleration of the blocks are related as follows:

- (A) acceleration of "a" > acceleration of "b"
- (B) acceleration of "a" = acceleration of "b" > 0
- (C) acceleration of "b" > acceleration of "a"
- (D) acceleration of "a" = acceleration of "b" = 0
- (E) not enough information to answer.

22. After being hit, a golf ball driven down a fairway is observed to travel through the air with a trajectory (flight path) similar to that in the depiction below.



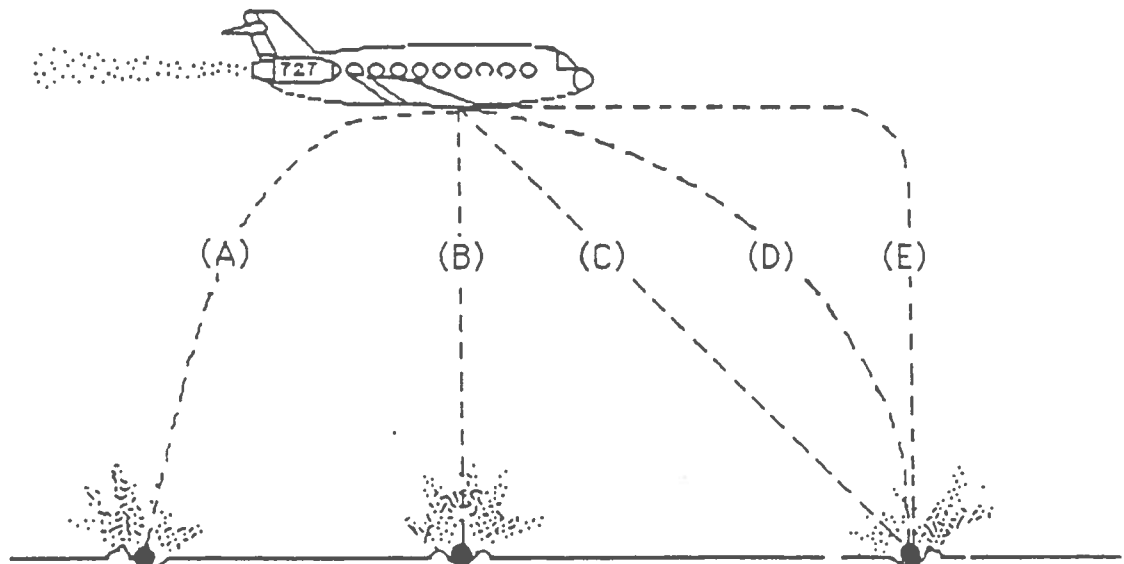
Which following force(s) is(are) acting on the golf ball during its entire flight?

1. the force of gravity
2. the force of the "hit"
3. the force of air resistance

- (A) 1 only  
(B) 1 and 2  
(C) 1, 2, and 3

- (D) 1 and 3  
(E) 2 and 3

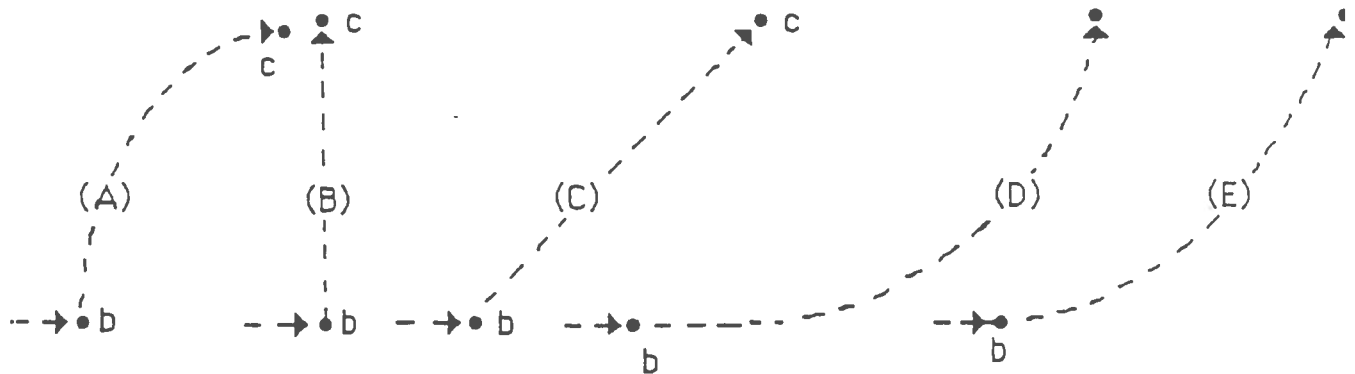
23. A bowling ball accidentally falls out of the cargo bay of an airliner as it flies along in a horizontal direction. As seen from the ground, which path below would the bowling ball most closely follow after leaving the airplane?



- \* When answering the next four questions, refer to the following statement and diagram.
- \* A rocket, drifting sideways in outer space from position "a" to position "b". is subject to no outside forces. At "b", the rocket's engine starts to produce a constant thrust at right angles to line "ab". The engine turns off again as the rocket reaches some point "c".



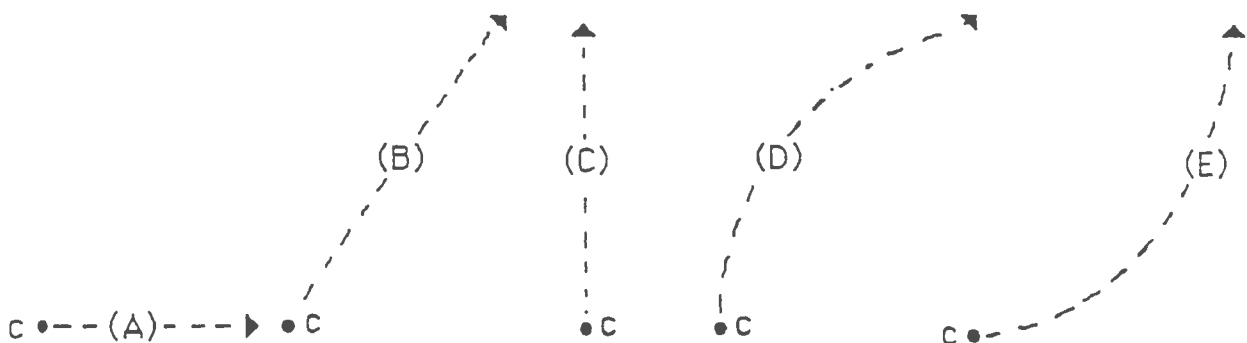
24. Which path below best represents the path of the rocket between "b" and "c"?



25. As the rocket moves from "b" to "c", its speed is;

- (A) constant.
- (B) continuously increasing.
- (C) continuously decreasing.
- (D) increasing for a while and constant thereafter.
- (E) constant for a while and decreasing thereafter.

26. At "c" the rocket's engine is turned off. Which of the paths below will the rocket follow beyond "c"?



27. Beyond "c", the speed of the rocket is;

- (A) constant.
- (B) continuously increasing.
- (C) continuously decreasing.
- (D) increasing for a while and constant thereafter.
- (E) constant for a while and decreasing thereafter.

28. A large box is being pushed across the floor at a constant speed of 4.0 m/s. What can you conclude about the forces acting on the box.

- (A) If the force applied to the box is doubled, the constant speed of the box will increase to 8.0 m/s.
- (B) The force applied to move the box at a constant speed must be more than its weight.
- (C) The force applied to move the box at a constant speed must be just equal to the external forces that resist its motion.
- (D) The force applied to move the box at a constant speed must be more than the external forces that resist its motion.
- (E) There is a force being applied to the box to make it move but the external forces such as friction are not "real" forces they just resist motion.

29. If the force being applied to the box in the preceding problem is suddenly discontinued, the box will;

- (A) stop immediately.
- (B) continue at a constant speed for a very short period of time and then slow to a stop.
- (C) immediately start slowing to a stop.
- (D) continue at a constant velocity.
- (E) increase its speed for a very short period of time, then start slowing to a stop.

## Hypothesis Testing

Welcome to the hypothesis testing lab. We have had several lectures on the scientific method and how it is applied to problem solving. Now is your chance to apply the information we have been discussing in class. Today you will come up with a hypothesis and a way to test it. You must use the scientific method and please use your imagination.

Things to remember about hypotheses... A hypothesis often begins with an observation. A hypothesis must be testable. A hypothesis must be able to be proven false. A hypothesis is tested with an experiment. The experiment should be repeatable. The results of an experiment might lead to an alternative hypothesis. The strengths of many experiments include a positive control or a negative control. These should be considered in your experiment. **You do NOT have to actually do this experiment!**

Step one: Come up with a hypothesis! (Hint: Use one of your many observations to come up with your hypothesis.)

Step two: Come up with an experiment to test your hypothesis. (Hint 1: You may find that your hypothesis is a little ambitious and difficult to test. You may have to go back and revise your hypothesis or even come up with another one.)

Step three: Figure out what kind of data your experiment will generate. Every experiment should generate good data. (Hint: Make sure that you specify what you will be measuring and what units your data will have.)

Step four: Figure out what materials you will use in your experiment and how you will use them.

Step five: Make a table or chart of the expected results that your experiment will generate. (Hint: Show what kind of data your experiment will generate.)

Step six: Add a conclusions section explaining the strengths and weaknesses of your experiment and other experiments that might increase your understanding of the hypothesis tested.

Now, follow the steps above to create (and WRITE UP) a research proposal (for your GRADE). Use your imagination and come up with a hypothesis and an experiment to test it.

Your proposal should include (in the following order with a **bold** label.):

- a) The title of your experiment. The title should be descriptive of the study being conducted. (1pt)
  - b) An introduction that describes your observation. (3pts)
  - c) Your hypothesis to be testable. (2pts)
  - d) Your materials and methods for the experiment. (Include controls.) (3pts)
  - e) Your expected results in descriptive and tabular forms. (3pts)
  - f) The conclusions that you should be able to draw from your experiment. The weaknesses of your experiment (maybe what might go wrong or be improved). (3pt)
- The future experiments that may be generated based on the results of your experiment. (How to further test your hypothesis.)

Step one through step four must be completed by the end of the lab today. The report must be handed in by the beginning of next week's lab.

Objectives to be assessed on laboratory assignments and in class exams:

- 1) Describe the process of scientific inquiry.
- 2) Solve problems scientifically.
- 3) Communicate scientific information.
- 4) Apply quantitative analysis to scientific problems.
- 5) Apply scientific thinking to real world problems.

Spring 2019

BIOL 2110 Principles of Biology: Cellular and Molecular Biology (3 credit hours)  
207 (1 credit hour) BIOL 2110L Principles of Biology: Cellular and Molecular Biology Lab  
Syllabus

Professor:

Dr. Zenaido Tres Camacho, PhD  
Professor, Cell and Molecular Biology  
Department of Natural Sciences  
Western New Mexico University  
[camachoz@wnmu.edu](mailto:camachoz@wnmu.edu)

575.538.6251

Fax: 575.538.6228

EMAIL is the preferred method of communication.

Office Hours Dedicated for this course: MWF 11am-12pm or by appointment.

Class Text:

Biology, 11<sup>th</sup> edition by Raven et al. ISBN# 978-1-259-18813-8 (The 10<sup>th</sup> edition by Raven et al. ISBN# 978-0-07-338307-1 can also be used) (The 9<sup>th</sup> edition by Raven et al. ISBN# 978-0-07-353222-6 can also be used) The text is available in the WNMU bookstore or on-line.

**Evaluation:**

This course has a combined grade for the classroom and laboratory sections. There will be 4 exams based on classroom material and a cumulative final exam that will be given according to the University schedule. Laboratory exercises will be evaluated separately, but will be combined into the total score for the final grade. The grading scale will be based on the percentage of the total points at the end of the semester.

Exam 1	40 pts	>90%	A
Exam 2	50 pts	80-89%	B
Exam 3	50 pts	70-79%	C
Exam 4	60 pts	60-69%	D
Final Exam	100pts	<60%	F
Lab score	<u>100pts</u>		
Total	400pts		

**Assignments/Due Dates:**

There will be no make-up exams! There will be no make-up labs! University rules allow for excused absences for required activities, but it is the responsibility of the student to communicate with the instructor prior to (**before!**) any scheduled absences. Points on late assignments will be deducted. It is the responsibility of the student to make sure work is handed in and graded. Quizzes and exams will begin at the beginning of class, so arriving late may cause a student to have less time (or no time) to for the graded assignment.



**Attendance:**

Attendance at lecture is highly recommended. The lecture will serve to highlight the important concepts on which to concentrate your study. The purpose of lecture will be to amplify, clarify and emphasize material from your assigned reading, so it is advantageous to complete the reading assignment ***before coming to lecture***. Exam questions will test both mastery of factual material and the understanding of important concepts.

**Other Expectations:**

Laboratory safety is paramount. Anyone not adhering to safe laboratory procedures will be asked to leave and be counted as absent. No make up labs, late labs or assignments.

Students are expected to have an understanding of fractions and decimal numbers. Students need to be able to add, subtract and multiply fractions and decimals without a calculator on exams. If a student is unable to work with fractions or decimal numbers, the student must seek help outside of class.

Cell phones must be turned off for the entirety of each exam, each quiz or when requested. No ear-buds in class or labs.

Solving genetics problems is a major part of this course. Many examples will be given in class and on handouts, but it is expected that students explore other sources for problem solving including on-line resources.

**Course instructional objectives:**

Biology 206/207 is an introductory course in cell and molecular biology. This course is designed for students majoring in the biological sciences and is a prerequisite for upper division genetics and cell biology. At the 200 level of classes, students are expected to answer questions with short answers or diagrams with proper spelling. Writing is expected to be clear and comprehensible. If the answer can not be understood by the grader and the instructor, then the answer will be not be counted as correct.

**Course Outcomes or Competencies:**

Students should have understanding of several areas of cell and molecular biology after successful completion of Biology 206/207 including macromolecular structure, enzymology, cellular metabolism, cell structure and genetics. Students will also be engaged in the scientific process of investigation.

**Lab fee statement** : Lab fees may be used for paper and printing supplies for course materials and exams. To repair or replace printers. To purchase exam materials and exams offered by testing services and materials to support web classes. To purchase computers used specifically used for teaching. For the purchase of lab specimens, models, supplies, and chemicals. To purchase safety equipment, MSDS/SDS for chemicals, and to pay for the disposal of waste chemicals. To purchase, repair, clean, calibrate, and update lab equipment and for

computers and/or programs to run equipment. To pay mileage charges, gas costs, accommodation cost, and entry fees for fieldtrips. To buy equipment (stoves, tents, etc. ) for fieldtrips.

**Academic Integrity Policy and Procedures:** Each student shall observe standards of honesty and integrity in academic work completed at WNMU. Students may be penalized for violations of the Academic Integrity policy. Please refer to pages 60 and 61 of the 2008-2009 Catalog.

**Class Procedures for Inclement Weather:** Please refer to University inclement policy as indicated in the 2008/2009 University Catalogue.

**Special Needs Students:** Students with disabilities in need of accommodation should register with the Special Needs Office (JUANCB 210, Ext. 6498) at the beginning of the semester. With student permission, that office will notify instructors of any special equipment or services a student requires.

**Disability Services at WNMU:** Services for students with disabilities are provided through the Academic Support Center's Disability Support Services Office in the Juan Chacon Building, Room 220. Some examples of the assistance provided are: audio materials for the blind or dyslexic, note takers, readers, campus guides, audio recorders, a quiet testing area, and undergraduate academic tutors (available to all WNMU students). In order to qualify for these services, documentation must be provided by certified health care professionals. Disability Support Services forms are available in the Academic Support Center. The Disability Support Services Office, in conjunction with the Academic Support Center, serves as Western New Mexico University's liaison for students with disabilities. The Academic Support Center's Disability Support Services Office can be contacted by phone at (575) 538-6400 or e-mail at [dss@wnmu.edu](mailto:dss@wnmu.edu).

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**Communication Policy Statement regarding official email :** WNMU's policy requires that all official communication be sent via Mustang Express. As a result, all emails related to your enrollment at WNMU and class communication – including changes in assignments and grades – will be sent to your [wnmu.edu](mailto:wnmu.edu) email address. It is very important that you access your Mustang Express e-mail periodically to check for correspondence from the University. **If you receive most of your email at a different address you can forward your messages from Mustang Express to your other address.**

**Example:** Martin Classmember was assigned a WNMU email address of [classmember12@wnmu.edu](mailto:classmember12@wnmu.edu) but Martin would rather receive his emails at his home email address of [martinclass@yahoo.com](mailto:martinclass@yahoo.com)

Martin would follow the direction provided at <http://www.wnmu.edu/campusdocs/direction%20for%20forwarding%20email.htm>

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Biology Schedule Spring 2019  
(This is a tentative outline and subject to change.)

M.Jan 14	Introduction
W.Jan 16	Chapter 1 Science of Biology
F.Jan 18	Chapter 1 Science of Biology
M.Jan 21	University Holiday
W.Jan 23	Chapter 2 Nature of Molecules Lab: Hypothesis testing
F.Jan 25	Chapter 3 Biological Molecules
M.Jan 28	Chapter 3 Biological Molecules
W.Jan 30	Review Lab: Hypothesis testing lab due (10pts) Lab: Drawing Molecules
F.Feb 01	Exam 1
M.Feb 04	Chapter 4 Cell Structure
W.Feb 06	Chapter 4 Cell Structure
F.Feb 08	Chapter 5 Membranes
M.Feb 11	Chapter 5 Membranes Quiz:Cell structure
W.Feb 13	Chapter 9 Cell-Cell Interactions Lab: Histology Lab
F.Feb 15	Chapter 9 Cell-Cell Interactions
M.Feb 18	Chapter 9 Cell-Cell Interactions Lab: Lipid lab
W.Feb 20	Review Histology Lab Due
F.Feb 22	Exam 2
M.Feb 25	Chapter 6 Energy and Metabolism
W.Feb 27	Chapter 6 Energy and Metabolism
F.Mar 01	Chapter 6 Energy and Metabolism
M.Mar 04	Chapter 7 How Cells Harvest Energy
W.Mar 06	Chapter 7 How Cells Harvest Energy
F.Mar 08	Chapter 7 How Cells Harvest Energy
M.Mar 11	Spring Break
W.Mar 13	Spring Break

F.Mar 15	Spring Break
M.Mar 18	Review
W.Mar 20	Exam 3
F.Mar 22	Chapter 14 DNA
M.Mar 25	Chapter 14 DNA
W.Mar 27	Chapter 15 Genes and how they work Lab: DNA Model
F.Mar 29	Chapter 15 Genes and how they work
M.Apr 01	Chapter 15 Genes and how they work
W.Apr 03	Chapter 15 Genes and how they work Lab: DNA Model Quiz (10pts)
F.Apr 05	Chapter 15 Genes and how they work
M.Apr 08	Chapter 10 How Cells Divide
W.Apr 10	Chapter 11 Sexual Reproduction and Meiosis
F.Apr 12	Chapter 12 (Genetics problems)
M.Apr 15	Review
W.Apr 17	Exam 4a
F.Apr 19	University Holiday
M.Apr 22	Chapter 13 Genetics Problems
W.Apr 24	Chapter 13 Genetics Problems
F.Apr 26	Exam 4 Part B During Lab
M.Apr 29	Chapter 28 Prokaryotes Lab: Prokaryotic survey hypothesis
W.May 01	Chapter 27 Viruses
F.May 03	Review

A cumulative final will be given according to the University schedule.



	Excellent (4)	Good (3)	Acceptable (2)	Unacceptable (1)
Effective Communication (Competencies: 1a-c; 5a-d; 6c)	<b>English 102: Analyze communication through reading and writing skills</b>			
	<b>1A: Rhetoric:</b> Uses different rhetorical appeals (logos, ethos, pathos) either as the voice of the paper or to convey attitude or evidence.	May use at least one rhetorical appeal that adds to the paper's voice or conveys an attitude or evidence within the paper itself.	May use rhetorical appeal very little, giving the sense that writer is not using the proper appeals for the given writing situation.	Fails to use appropriate rhetorical appeals.
	<b>1B: Aesthetics:</b> Uses metaphor and other literary devices to convey or support an idea; demonstrates engagement with ideas and sources; brings a distinctive angle to the writing situation.	May use a metaphor or other literary device; demonstrates a novice engagement with ideas and sources but adopts a relatively distinctive quality to the writing.	May or may not use metaphor or literary device but does not demonstrate much engagement with ideas and sources. Does not bring a distinctive personal voice or quality to the writing.	Does not include metaphors or other literary devices and shows a lack of overall engagement with ideas or sources in the sense that the prose is flat.
	<b>1C: Diverse points of view:</b> Explores alternative insights or considers other points of view, such as using counterargument or concession. May challenge assumptions.	Writing is in general one-sided without exploring alternative insights or other points of view. May or may not use counterargument, and may challenge assumptions on occasion.	Writing is one-sided and does not explore alternative insights or other points of view. Might use counterargument but in a way that is basic. Does not challenge assumptions.	Writing is one-sided and does not explore alternative insights or other points of view. Stays with "canned" arguments or plays it safe without challenging assumptions.
	<b>English 102: Employ academic writing styles appropriate for different genres and audiences.</b>			
	<b>English 104: Use an appropriate voice (including syntax and word choice)</b>			
	<b>5A: Situation and Purpose:</b> Follows instructions and criteria, to include format, voice, page limit or word count, structure, and stylistic expression (personal, objective, analytical, etc.)	Follows most instructions and criteria, to include format, voice, page limit or word count, structure, and stylistic expression (personal, objective, analytical, etc.)	Follows some instructions and criteria, to include format, voice, page limit or word count, structure, and stylistic expression (personal, objective, analytical, etc.)	Fails to follow instructions and criteria, to include format, voice, page limit or word count, structure, and stylistic expression (personal, objective, analytical, etc.)
	<b>5B: Genre:</b> Follows the conventions of the genre as assigned by the instructor, such as narrative, definition, argument, process, etc., and adapts to the writing to appeal to a specific audience.	Follows most conventions of the genre as assigned by the instructor, such as narrative, definition, argument, process, etc., and writer adapts to appeal to a specific audience.	Follows some conventions of the genre as assigned by the instructor, such as narrative, definition, argument, process, etc., and the writer (somewhat) adapts to appeal to a specific audience.	Fails to follow conventions of the genre as assigned by the instructor, such as narrative, definition, argument, process, etc., and the writer also fails to adapt to appeal to a specific audience.
	<b>5C: Value and Creativity:</b> Explores angles and everyday objects or ideas in an unusual, surprising, and interesting way. Adds a unique quality to the perspective or written elocution.	Explores angles and everyday objects or ideas in less obvious ways. For the most part, the writer adds a unique quality to the perspective or written elocution.	May explore angles, everyday objects or ideas in less obvious ways. May fail to add a unique quality to the perspective or written elocution.	Fails to explore angles, everyday objects or ideas in unique or less obvious ways. Fails to add a unique quality to the perspective or written elocution.
	<b>5D: Resourcefulness and Independence:</b> Writer takes risks and actively seeks out untested and unconventional approaches to the assignment or to argumentation. Writer adopts, extends, and transforms a unique idea, format, or product to create something new.	Writer takes risks with language, phrases, ideas, and strategies.	Writer may take some risks but holds back when it comes to language, phrases, ideas, and strategies.	Essay either takes no risks, OR mistakes risk-taking as a way to hide a lack of content.

Grading Rubric for Research Papers– English 102/104 REV 2018

	<b>6C: Analysis and Discussion:</b> Demonstrates analysis by making points supported by evidence; includes in the discussion a synthesis of sources; includes appropriate primary and/or secondary sources and attends to the quality of the evidence presented.	Organizes evidence to reveal important patterns, differences, or similarities	Organizes evidence, but the organization is not effective in revealing important patterns, differences, or similarities	Lists evidence, but it is not organized and/or does not articulate its relation to the paper's objectives/goals.
Writing Processes (Comps.: 2a-b)	<b>English 102: Employ writing processes such as planning, organizing, composing, and revising.</b> <b>English 104: Employ writing processes such as planning, organizing, composing, and revising.</b>			
	<b>2A: Writing Processes:</b> Final draft indicates that writer has taken time to plan, organize, compose, and revise based on the arrangement of the paper, the strength of the thesis, and lack of common rough draft errors such as weak transitions, typographical errors, and errors in documenting sources.	Includes evidence of planning, drafting, revising, and/or editing that contributes to overall quality of the final work.	Makes some attempts to plan, revise, or edit first draft; but this work does not contribute to the overall quality of the piece.	Makes very few (or no) attempts to plan, revise, or edit first draft of writing.
	<b>2B: Student Knowledge:</b> Student has articulated the steps taken as aligned with the processes of writing, e.g., prewriting, planning, drafting, revising, and editing.	Student articulated the steps taken as aligned with the processes of writing; falls short of the "excellent" category.	Student articulated some of the steps taken as aligned with the processes of writing.	Student articulated very few of or failed to articulate the steps taken as aligned with the processes of writing.
Essay Development (Comps. 3a-e)	<b>English 102: Express a primary purpose and organize supporting points logically.</b> <b>English 104: Analyze the rhetorical situation for purpose, main ideas, support, audience, and organizational strategies in a variety of genres.</b>			
	<b>3A: Focus/Thesis.</b> The central point or argument is clearly stated or easy to identify and is sophisticated in both statement and insight.	Central point or argument is clear, specific, and is easy to identify. May be sophisticated in statement and/or insight.	Central point or argument is clear, general in nature or does not convey the central argument or main point in the paper.	Central point or argument is not clear or easy to identify <b>OR</b> No discernable central point or argument is present.
	<b>3B: Evidence:</b> The evidence in paragraphs back up, show, or prove the thesis. Evidence includes examples, comparisons, scenarios, observations, reasoning, etc. and enough analysis or elaboration to fully explain main ideas.	Examples used to support most points. Some evidence does not support point, or may appear where inappropriate.	Examples used to support some points. Points often lack supporting evidence, or evidence used where inappropriate (often because there may be no clear point).	Very few or very weak examples. General failure to support statements, or evidence seems to support no statement.
	<b>3C: Organization:</b> Paragraphs of support are structured to support the thesis; paragraphs flow (the writers has not switched back and forth between topics); transitions work well to create a steady furthering of ideas and to connect the evidence with the thesis.	All paragraphs have one main idea; each paragraph provides unified, coherent, and developed support for its thesis and supporting ideas.	Some paragraphs contain more than one main idea; Paragraphs contribute unified and coherent support, but paragraphs may be uneven in development and transition.	Many paragraphs contain more than one idea; Paragraphs do not contribute unified and coherent support.
	<b>3D: Unity/Development/Coherence:</b> Sentences are unified within paragraphs;	Provides clear topic sentences and/or transitions in all	Provides topic sentences and transitions in	Provides few or no paragraphs with topic sentences and/or

	paragraphs are fully developed; sentence-level ideas cohere within a paragraph. Transitional words & phrases help reader move from idea to idea. The solution is argued convincingly w/ logic and evidence.	paragraphs; Sentences have few grammatical errors that seriously detract from meaning, but sentences could have been more varied and interesting.	most paragraphs; Sentences are simple and lack variety.	transitions; Sentences are unclear and many grammatical errors in structure make paper virtually unreadable.
	<b>3E: Development and Deepening:</b> The points are elaborated on with details, examples, comparisons, and other types of evidence, giving depth to the overall writing.	In-depth discussion & elaboration in most sections of the paper.	The writer has omitted pertinent content or content runs-on excessively. Quotations from others outweigh the writer's own ideas excessively.	Cursory discussion in all the sections of the paper or brief discussion in only a few sections.
Source Integration (Comps. 4a-e)	<b>English 102: Use and document research evidence appropriate for college-level writing. English 104: Integrate information from sources to effectively support claims as well as other purposes (to provide background information, evidence/examples, illustrate an alternative view, etc.).</b>			
	<b>4A: Documented research as evidence:</b> Evidence makes the paper's intent clear by supporting claims, illustrating points, demonstrating facts, providing background information, spring-boarding into counterargument, etc.	Evidence demonstrates consistency in making the paper's intent clear but use of additional source information could strengthen the intent, explanation, or argument.	Evidence may or may not make the paper's intent clear but additional source information should be added to strengthen secondary claims. Documented research as evidence is lacking such that statements are sometimes unfounded.	Demonstrates a limited attempt to use sources to support ideas in the writing.
	<b>4B: Integrating quotations and paraphrases:</b> Sources are integrated smoothly and correctly through proper techniques, such as by paraphrases, summaries, and quotations.	Most sources are integrated smoothly and relatively correctly through proper paraphrases, summaries, and quotations. There may be a transition missing.	Few sources are integrated correctly through proper paraphrases, summaries, and quotations.	Fails to integrate sources through proper paraphrases, summaries, and quotations.
	<b>English 104: Use a variety of research methods to gather appropriate, credible information. Quote, paraphrase, and summarize sources ethically, citing and documenting them appropriately.</b>			
	<b>4C: Source Types:</b> Supporting evidence is accurate, current, appropriate, variegated, credible, and sufficient. Includes a variety of source types, e.g., journals, WWW, videos, etc.	Provides essential, accurate evidence to support the central position with the required research sources that are mostly relevant, accurate, and reliable.	Provides some evidence to support the central position with only a few research sources. Some sources may not be relevant, accurate, and reliable.	Lacks sufficient research sources to support the central position and/or, if included, are generally not relevant, accurate, or reliable. Contains numerous factual mistakes, omissions, or oversimplifications.
	<b>4D: In-text citation mechanics:</b> In-text citations are accurate in terms of MLA or APA format.	In-text citations are mostly accurate in terms of MLA or APA format.	In-text citations are somewhat accurate in terms of MLA or APA format.	In-text citations are not accurate in terms of MLA or APA format.
	<b>4E: Works Cited/References page:</b> Works Cited (MLA) or References (APA) page is formatted accurately. Entries are alphabetized and arranged in accurate formatting order, such as Author. (year). Title. Source. Publication Information.	Provides a Works Cited/References page, formatted correctly with some errors, for instance, the list is not alphabetized or even though formatting is a bit out of sequence it would be entirely possible to identify and locate the source.	Provides a Works Cited/References page, poorly formatted or with abundant errors. Maybe a source could be identified and located, but the lack of formatting makes identification uncertain.	Provides a Works Cited/References page that shows little or no attempt at appropriate and correct formatting.

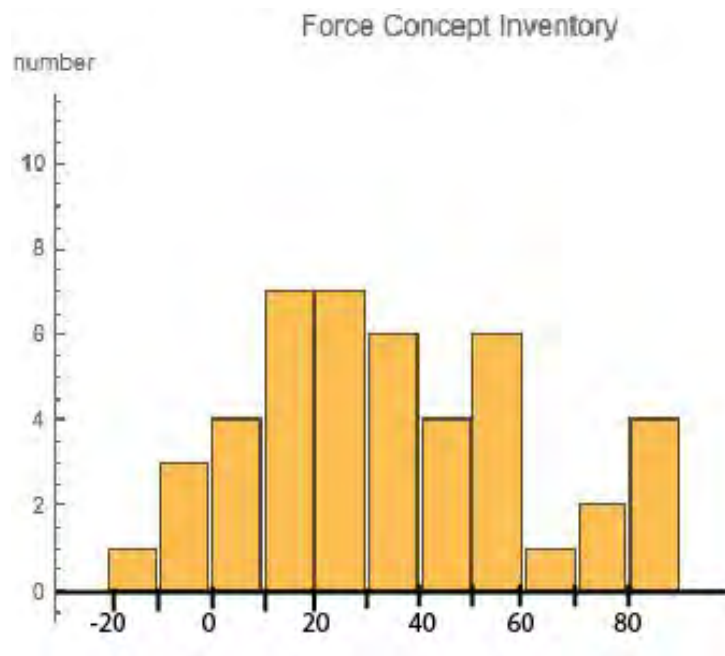


Technical Aspects 6a-b)	<b>English 102: Identify and correct grammatical and mechanical errors in students' writing.</b>			
	<b>6A: Grammar, Punctuation, Mechanics, and Spelling:</b> Complete sentences; avoids FRAG, RO, CS (i.e., sentence boundaries); unity, development, variety, absence of redundancy, etc. S/V agreement, pronoun consistency, tenses; commas; apostrophes; placement of quotation marks, question marks, etc.	Uses straightforward language that generally conveys meaning to readers. Occasional errors and minor problems with mechanics of language. Occasional awkward sentences and poor transitions reduce readability.	Uses language that generally conveys meaning to readers with clarity, although writing may include some errors. Frequent problems with mechanics of language. Awkward sentence construction. Poor or absent transitions. Frequently difficult to understand.	Uses language that sometimes impedes meaning because of errors in usage. Problems with the mechanics of language serious enough to interfere with effective communication. Frequent errors in punctuation, spelling, sentence structure, etc.
	<b>6B: Expression, Wording, and Phrasing:</b> Maintains a distinctive and convincing voice appropriate to the rhetorical situation. Includes coherences, diction, word usage, syntax. The language is precise, the wording is exact and accurate.	The writer sustains an appropriate voice. The essay is handled with clarity and purpose, and occasional sophistication	The writer's voice is occasionally inappropriate or lacking purpose. The essay is handled without sophistication.	The writer is unable to sustain an appropriate voice. The essay may be potentially interesting but is handled without clarity or purpose.

**PAPERS MAY RECEIVE A GRADE OF "F" FOR ANY ONE OF THE FOLLOWING:**

Paper does not meet page or word count requirement	Paper is off topic	Paper has no discernible thesis	Paper has extensive errors that interfere with communication of ideas	More than 4 or more marks in "Unacceptable" column	Plagiarism: Overwhelmingly evident that student voice is not discernible to the instructor.	No in-text citations  <b>OR</b>  No works cited or reference page	Uses inappropriate sources: .com or generalized encyclopedias
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## Assessment of typical SLO



## Rubric for Critical Thinking

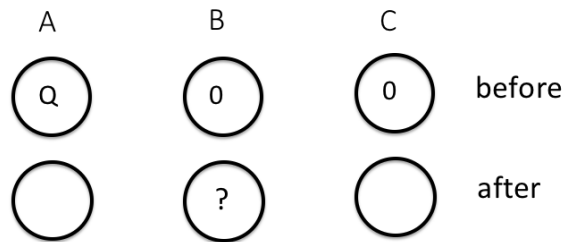
Number of students assessed =

Enter the number of students that fall into each category.

Essential Skill: Critical Thinking	Unacceptable	Acceptable	Target
<i>All component skills</i>	Gain < 0.3	$0.3 \leq \text{Gain} \leq 0.6$	$0.6 < \text{Gain}$

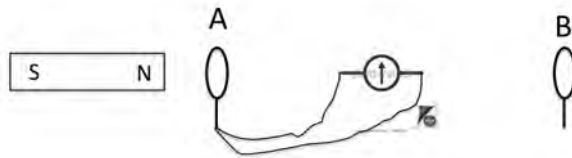
### SAMPLE ASSESSMENTS FOR CRITICAL THINKING

You have three identical conducting spheres: A, B, and C. Sphere A starts with a charge of  $Q$  while B and C start with no net charge. A and B are touched and separated. Then B and C are touched and separated. How much charge is now on sphere B?



- A)  $Q$       B)  $-Q/2$       C)  $Q/2$       D)  $Q/4$       E)  $0$

When the metal loop is transported instantly from position A to position B (far away from the magnet), the galvanometer needle is momentarily deflected by  $+1$ . If the loop is transported instantly from B to A, the needle is momentarily deflected by



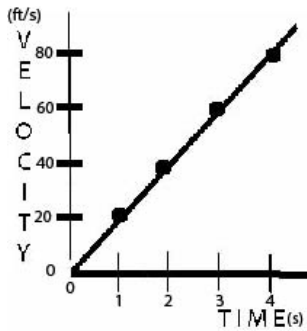
- A)  $+1$       B)  $0$       C)  $-1$

Kim takes a metal ruler and a wooden ruler from his pencil case. He announces that the metal one feels colder than the wooden one. These explanations are given by classmates. Whose explanation is best?

- A) Alice says: "Metal conducts heat away from his hand more rapidly than wood."
- B) Bob says: "Wood is a naturally warmer substance than metal."
- C) Carol says: "The wooden ruler contains more heat than the metal ruler."
- D) Dora says: "Metals are better radiators than wood."
- E) Ernest says: "Cold flows more readily from a metal."

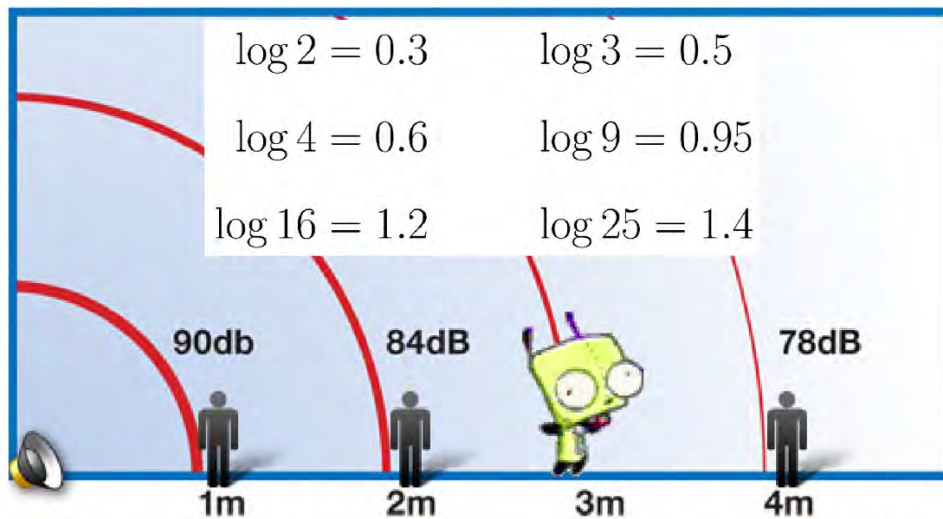
# SAMPLE ASSESSMENTS FOR QUANTITATIVE REASONING

A rocket sled accelerates uniformly from rest to 80 ft/s in 4 seconds. How far has it traveled in 2 seconds?



- a) 20 ft      b) 40 ft      c) 60 ft      d) 80 ft      e) 100 ft

What does Gir hear in decibels?



- A) 83.5      B) 83      C) 80.5      D) 79      E) 78.5

## Sample rubric for assessment of circuits lab

Number of students assessed =

Enter the number of groups that fall into each category.

Circuit 1

<b>Essential Skill: Social and personal responsibility</b>	<b>Unacceptable</b>	<b>Acceptable</b>	<b>Target</b>
<i>Civic discourse</i>	Student's initial guess is incorrect and the student does not recognize experimental contradiction.	Student's initial guess is correct and the student recognizes experimental confirmation.	Student's initial guess is incorrect and the student recognizes experimental contradiction.

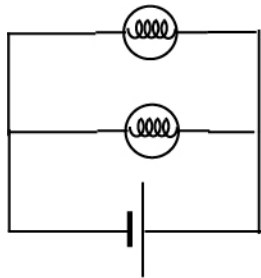
Similar rubrics for other three circuits.

## DC Circuits

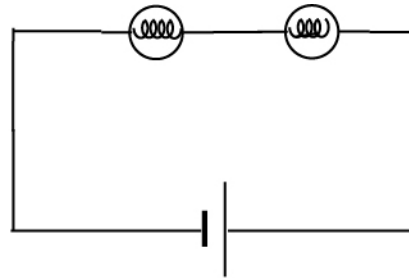
### INSTRUCTION

Answer each predictive question for each circuit before building the circuit. Then build and discover the answer to each question experimentally. For each prediction disproved, explain what was wrong with your original thinking and how you now understand the experiment result.

Circuits 1



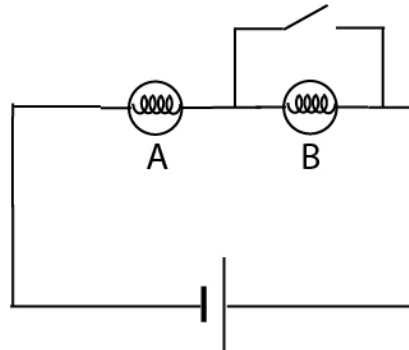
A



B

Which circuit do you predict radiates more light? Briefly explain your reasoning

Circuit 2

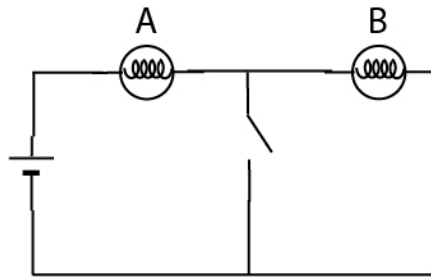


Predict the relative brightness of A and B before the switch is closed.

Predict what happens to the brightness of A when the switch is closed.

Predict what happens to the brightness of B when the switch is closed.

Circuit 3

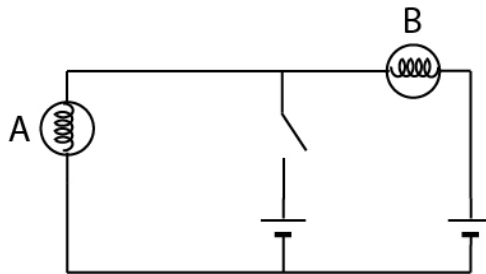


Predict the relative brightness of A and B before the switch is closed.

Predict what happens to the brightness of A when the switch is closed.

Predict what happens to the brightness of B when the switch is closed.

Circuit 4

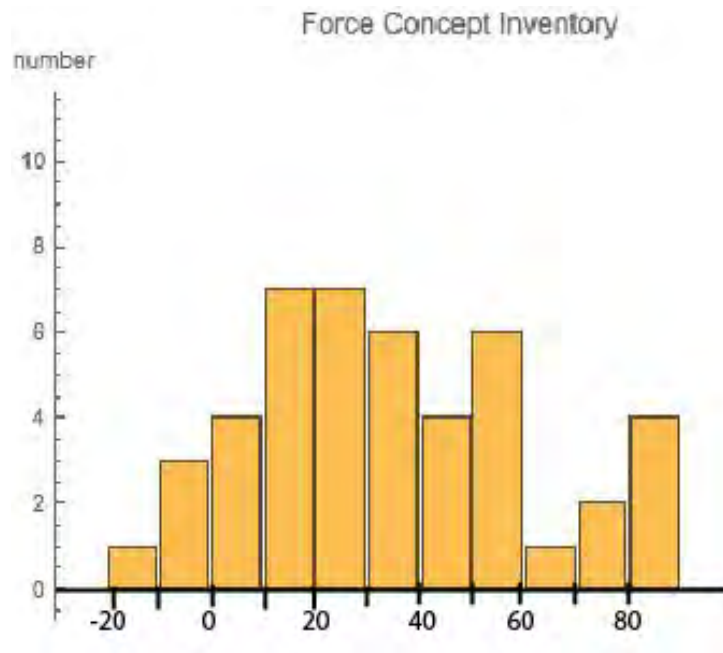


Predict the relative brightness of A and B before the switch is closed.

Predict what happens to the brightness of A when the switch is closed.

Predict what happens to the brightness of B when the switch is closed.

## Assessment of typical SLO



## Rubric for Critical Thinking

Number of students assessed =

Enter the number of students that fall into each category.

Essential Skill: Critical Thinking	Unacceptable	Acceptable	Target
<i>All component skills</i>	Gain < 0.3	$0.3 \leq \text{Gain} \leq 0.6$	$0.6 < \text{Gain}$

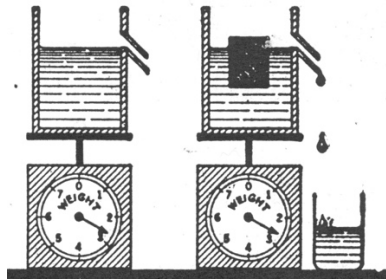


## SAMPLE ASSESSMENTS FOR CRITICAL THINKING



Which normal mode has the greater frequency?

- A)      B)      C) The two modes have the same frequency.

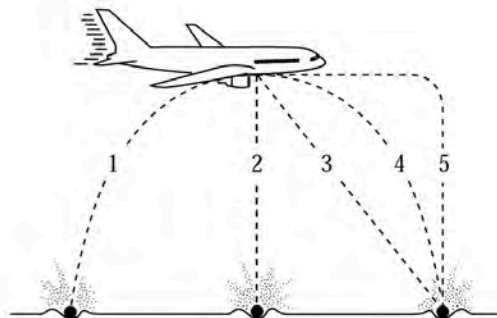


The weight of the water in the beaker is \_\_\_\_\_ the weight of the floating object.

- A) less than      B) more than      C) equal to

A bowling ball accidentally falls out of the cargo bay of an airliner as it flies along in a horizontal direction.

As observed by a person standing on the ground and viewing the plane as in the figure below, which of the paths 1–5 would the bowling ball most closely follow after leaving the airplane?



## EXERCISE EIGHT

### STRATIGRAPHIC FACIES AND PHYSICAL CORRELATION

#### Objectives:

1. To acquaint the student with stratigraphic facies
2. To acquaint the student with physical correlation of stratigraphic correlations
3. To acquaint student with Walther's law.

#### Materials:

1. Pencil
2. Eraser

#### Overview:

We use the term **facies** in a broad sense to describe the appearance and characteristics of a rock unit, usually reflecting the conditions of its origin. The term facies should not be used without making clear the specific kind of facies that is meant. **Lithofacies** are a lateral, mappable subdivision of a designated stratigraphic unit, distinguished stratigraphic unit, distinguished for adjacent subdivisions of the basis of lithology; a *facies* characterized by particular lithologic features. A **biofacies** is a body of sediment or rock distinguished from adjacent bodies solely on the basis of its fossils or their environmental implications.

When we see both intertonguing and lateral gradation this indicates the simultaneous operation of different depositional processes in adjacent environments. Deposition in each of these laterally adjacent environments yields a sedimentary facies, a body of sediment with distinctive physical chemical, and biological attributes. We see in marine transgressions and regressions both vertical and lateral facies relationships. Walther observed the same facies laterally were also present in a vertical sequence and formulated these observations into **Walther's law**, which holds that the facies seen in conformable vertical sequence will also replace one another laterally.

#### Assignment:

##### Activity 1:

1. You will be constructing a restored section for the rock units depicted in figure 8.1. With lines and symbols, interconnect various lithologic units and show the facies.
2. Does Walther's law apply to these rocks? Are there exceptions to Walther's law?



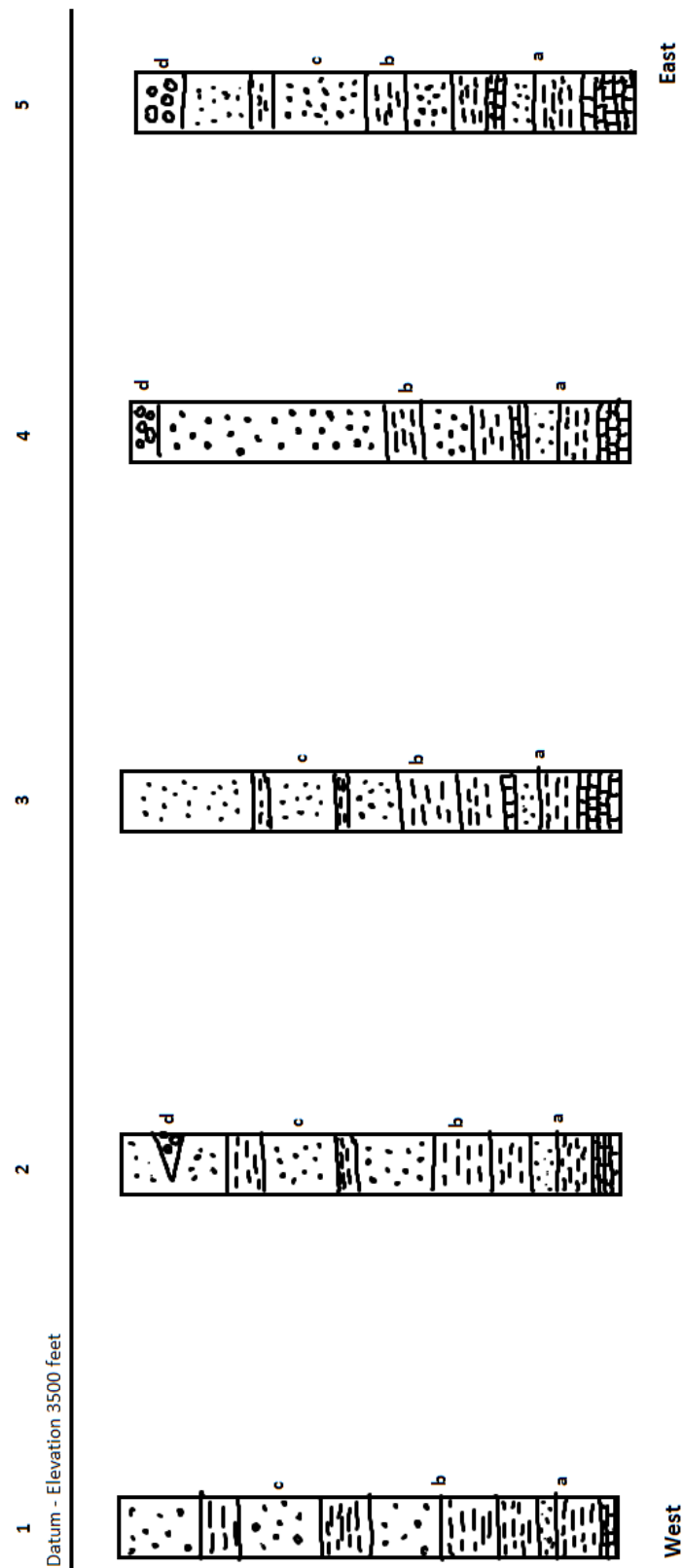


Figure 8.1 Correlation of rock units.

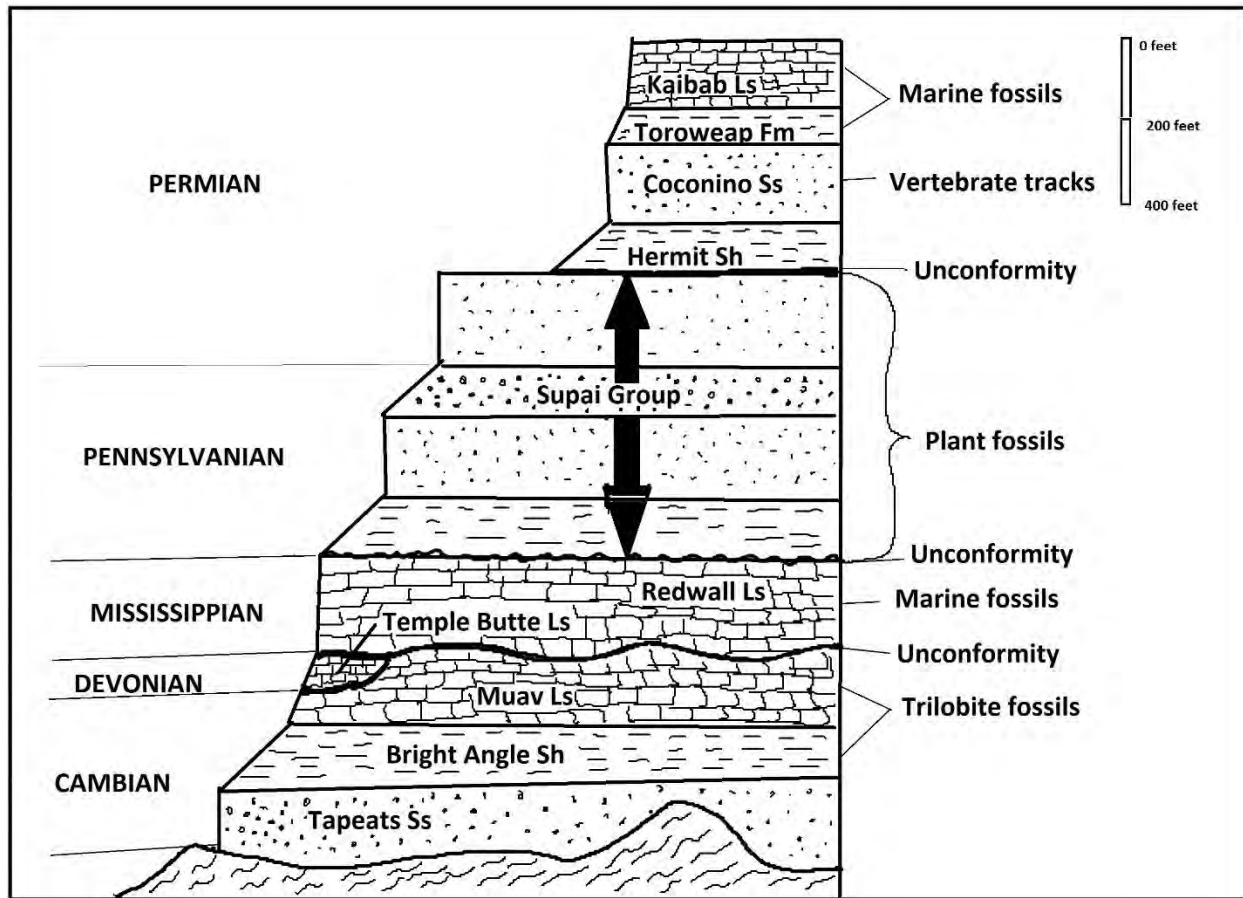


Figure 8.2 Cross section of Grand Canyon.

Activity 2:

Use Figure 8.2 to answer the following questions. This will be an exercise in lithostratigraphy. Figure 8.2 is a generalized stratigraphic section of the Grand Canyon. Unconformities are shown as wavy, or irregular dark lines. Sections that show straight up and down in the image are those formations forming a cliff, sections shown coming out at an angle would depict a slope. You learned about the symbols used to depict specific rock types in exercise 7 and will be using them in this section to help with your descriptions.

1. What are some possible explanations for why the temple butte limestone apparently cutting down into the Mauv limestone?

2. What event(s) are indicated by the vertical facies relationships in the cross section of the grand canyon?
3. What type of unconformity lies beneath the Tepeats Sandstone?
4. What type of unconformity lies between the Redwall limestone and Supai Group?
5. Go through and briefly describe each formation, facies, or group in figure 8.2 in terms of its thickness, lithology and weathering profile (slope, thickness lithology, and weathering profile).

*Example: Kaibab, is a limestone, approximately 150ft thick, forming cliffs.*

Name: \_\_\_\_\_

## Exam #2: February 25, 2019

1. A 200-volt power transformer has 400 turns on the primary. If it delivers a secondary voltage of 10 volts, how many turns are on the secondary?
  
  
  
  
  
  
  
  
  
  
2. A gas has a volume of 400 cu cm at pressure 20 psi. What is the pressure when the gas is compressed to 100 cu cm?
  
  
  
  
  
  
  
  
  
  
3. Convert to a percent:
  - (a) 5.12
  
  
  
  
  
  
  
  - (b) 0.12
  
  
  
  
  
  
  
  - (c)  $\frac{8}{3}$
  
  
  
  
  
  
  
  - (d) 14

(e)  $\frac{3}{5}$

(f) 0.00078

4. Solve for  $x$ :  $\frac{4}{3} = \frac{x}{15}$

5. Solve for  $g$ :  $\frac{21}{g} = \frac{7}{5}$

6. Solve for  $x$ :  $\frac{6}{10} = \frac{3}{x}$

7. Solve for  $A$ :  $\frac{A}{3} = \frac{24}{4}$



8. Convert to a decimal number:

(a)  $23\%$

(b)  $0.00002\%$

(c)  $14\frac{1}{2}\%$

(d)  $79212\%$

(e)  $176\%$

(f)  $362\frac{1}{4}\%$

9. Convert to a fraction in lowest terms:

(a)  $0.004\%$

(b)  $12\%$

(c)  $2.5\%$

(d)  $150\%$

10. A printer agrees to give a nonprofit organization at 25% discount on a printing job. The normal price to the customer is \$1000, and the printer's cost is \$700. What is the printer's percent profit over cost after the discount is subtracted?
11. If state sales tax is 7%, what is the price before tax if the tax is \$12.00.
12. Suppose you takeout a 20 year mortgage on \$100,000 at 8% annual interest. If you wait for 30 years to payback the \$100,000 with interest, how much do you have to payback in total?

13. If 6% of your salary is withheld for Social Security and Medicare, what amount is withheld from monthly earnings of \$800.00?
14. If you earn 5% commission on sales of \$700, what actual amount do you earn?
15. A small gasoline shop engine develops 50 hp at 1000 rpm. At 2000 rpm, its power output is increased by 10%. What actual horsepower does it produce at 2000 rpm?

## PART 8B: USING FOSSILS TO DETERMINE AGE RELATIONSHIPS

The sequence of strata that makes up the geologic record is a graveyard filled with the fossils of millions of kinds of organisms that are now extinct. Geologists know that they existed only on the basis of their fossilized remains or the traces of their activities (like tracks and trails). Geologists have also determined that fossil organisms originate, co-exist, or disappear from the geologic record in a definite sequential order recognized throughout the world, so *any rock layer containing a group of fossils can be identified and dated in relation to other layers on the basis of its fossils*. This is known as the **Principle of Fossil Succession**.

The sequence of strata in which fossils of a particular organism are found is called a **range zone**, which represents a chron of time. Organisms whose range zones have been used to represent named divisions of the geologic time scale are called **index fossils**.

The range zones of some well-known Phanerozoic index fossils are presented on the right side of Figure 8.13. Relative ages of the rocks containing these fossils are presented as *periods* and *eras* on the left side of Figure 8.13. By noting the range zone of a fossil (vertical black line), you can determine the corresponding era(s) or period(s) of time in which it lived. For example, the fossil record indicates that sharks have lived from (and are an index fossil for) late in the Devonian Period of the Paleozoic Era to the present time. All of the different species of dinosaurs lived and died during the Mesozoic Era of time, long before (many layers below) the time when humans first existed and left a record of fossils. Notice that Figure 8.13 also includes the following groups:

- **Brachiopods** (pink on chart): marine invertebrate animals with two symmetrical seashells of unequal size. They range throughout the Paleozoic, Mesozoic, and Cenozoic Eras, but they were most abundant in the Paleozoic Era. Only a few species exist today, so they are nearly extinct.
- **Trilobites** (orange on chart): an extinct group of marine invertebrate animals related to lobsters. They are only found in Paleozoic rocks, so they are a good index fossil for the Paleozoic Era and its named subdivisions.
- **Plants** (dark green on chart)

- **Reptiles** (pale green on chart): the group of vertebrate animals that includes lizards, snakes, turtles, and dinosaurs. **Dinosaurs** are only found in Mesozoic rocks, so they are an index fossil for the Mesozoic and its subdivisions.
- **Mammals** (gray on chart): the group of vertebrate animals (including humans) that are warm blooded, nurse their young, and have hair.
- **Amphibians** (brown on chart): the group of vertebrate animals that includes frogs and salamanders.
- **Sharks** (blue on chart).

Notice that absolute ages in millions of years are also presented on Figure 8.13. Determining absolute ages will be addressed in Part C, but you will need to use the absolute ages in this figure to answer some of the questions below.

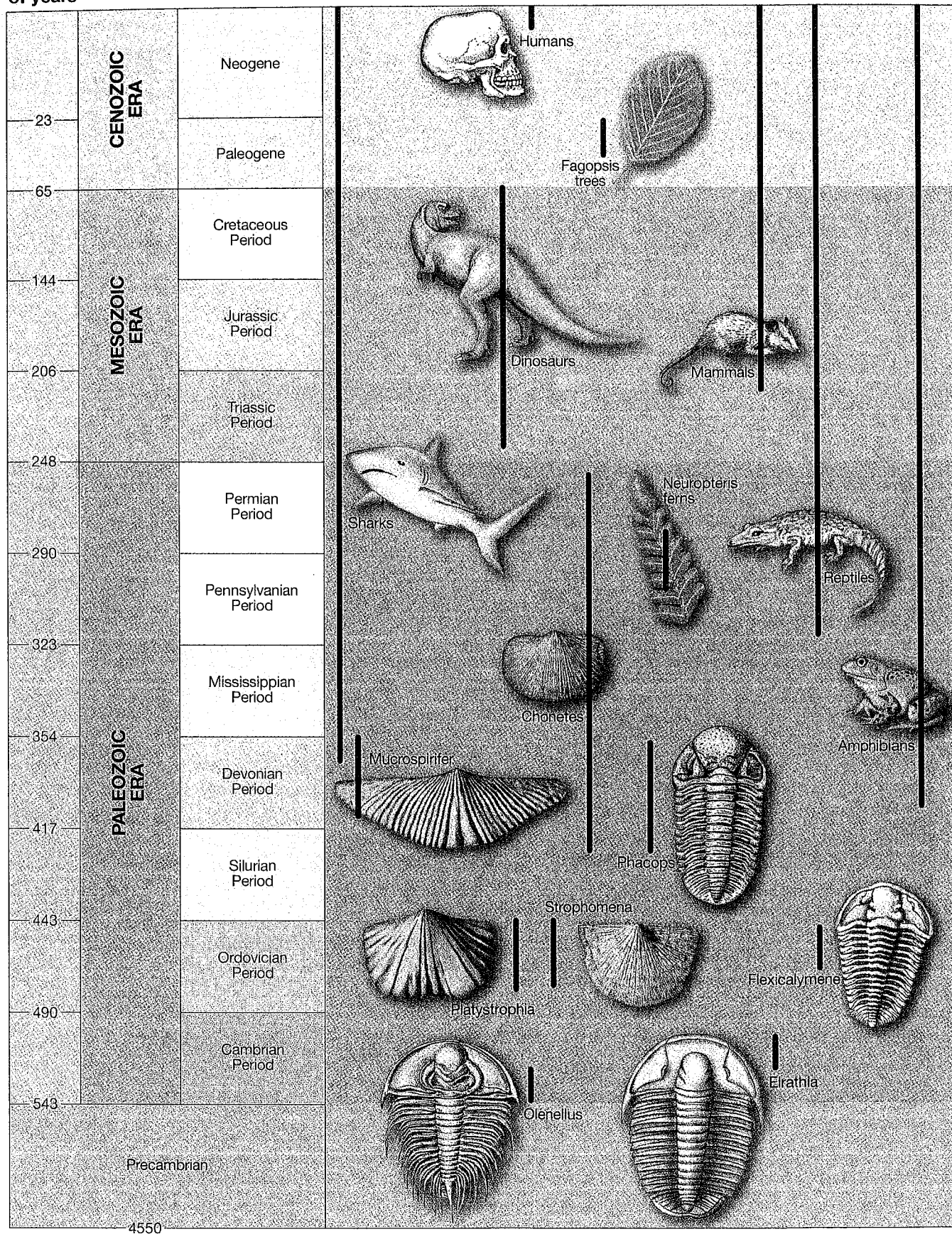
### Questions

4. Analyze the fossiliferous rock in Figure 8.14.
  - a. Based on Figure 8.13, what is the *relative age* of the rock in Figure 8.14? Explain your reasoning.
  - b. Based on Figure 8.13, what is the *absolute age* of the rock in Figure 8.14? Explain your reasoning.
5. Analyze the fossiliferous rock in Figure 8.15.
  - a. Based on Figure 8.13, what is the *relative age* of the rock in Figure 8.15? Explain your reasoning.
  - b. Based on Figure 8.13, what is the *absolute age* of the rock in Figure 8.15? Explain your reasoning.
6. Re-examine the geologic cross section in Figure 8.2 on the basis of its fossils.
  - a. Which one of the contacts between lettered layers is a disconformity?
  - b. What is missing at the disconformity?
  - c. If the present landscape in this cross section were covered today with a layer of sediment, then how much time would the resulting disconformity represent? Explain your reasoning.
7. What geologic events occurred during the Mesozoic Era in the region where Figure 8.3 is located? Explain your reasoning.

**Absolute  
Ages in  
millions  
of years**

**Relative Ages**  
Eras Periods

**Ranges (black vertical lines) of Index Fossils Pictured Below**



**FIGURE 8.13** Range zones (black lines) of some well-known index fossils relative to the geologic time scale.

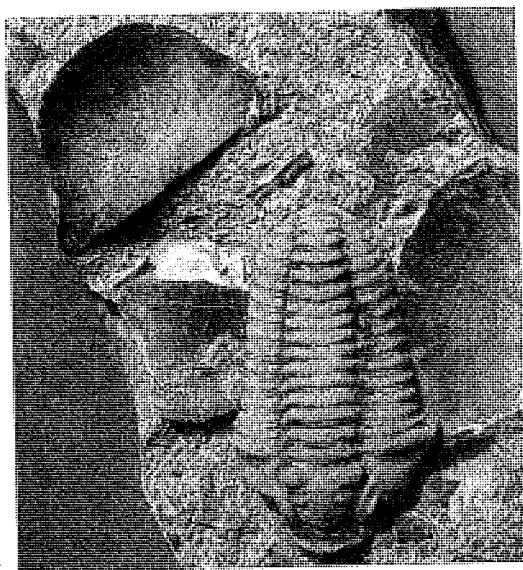


FIGURE 8.14 Fossiliferous rock sample for age analysis.

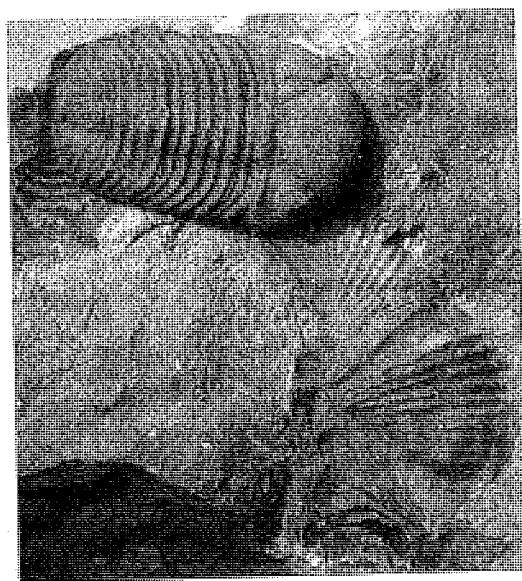


FIGURE 8.15 Fossiliferous rock sample for age analysis.

## PART 8C: DETERMINING ABSOLUTE AGES BY RADIOMETRIC DATING

You measure the passage of time on the basis of the rates and rhythms at which regular changes occur around you. For example, you are aware of the rate at which hands move on a clock, the rhythm of day and night, and the regular sequence of the four seasons. These regular changes allow you to measure the passage of minutes, hours, days, and years.

Another way to measure the passage of time is by the regular rate of decay of radioactive isotopes. This technique is called **radiometric dating** and is one way that geologists determine absolute ages of some geologic materials.

You may recall that **isotopes** of an element are atoms that have the same number of protons and electrons but different numbers of neutrons. This means that the different isotopes of an element vary in atomic weight (mass number) but not in atomic number (number of protons).

There are about 350 different isotopes that occur naturally. Some of these are *stable isotopes*, meaning that they are not radioactive and do not decay through time. The others are *radioactive isotopes* that decay spontaneously, at regular rates through time. When a mass of atoms of a radioactive isotope is incorporated into the structure of a newly formed crystal or seashell, it is referred to as a **parent isotope**. When atoms of the parent isotope decay to a stable

form, they have become a **daughter isotope**. A parent isotope and its corresponding daughter are called a **decay pair**.

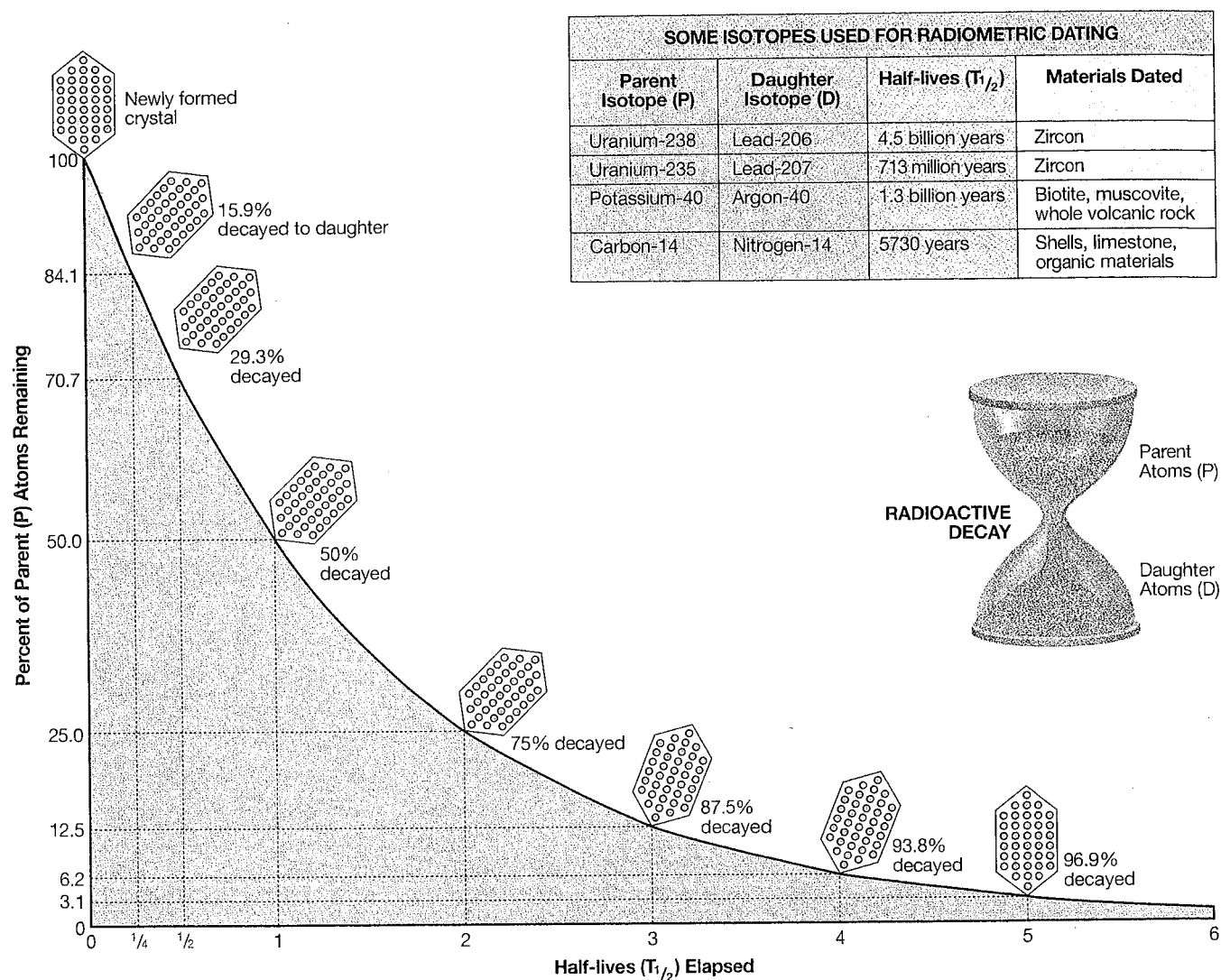
Atoms of a parent isotope always decay to atoms of their stable daughter isotope at an exponential rate that does not change. The rate of decay can be expressed in terms of **half-life**—the time it takes for half of the parent atoms in a sample to decay to stable daughter atoms.

### Radiometric Dating of Geologic Materials

The decay parameters for all radioactive isotopes can be represented graphically as in Figure 8.16. Notice that the decay rate is exponential (not linear)—during the second half-life interval, only half of the remaining half of parent atoms will decay. All radioactive isotopes decay in this way, but each decay pair has its own value for half-life.

Half-lives for some isotopes used for radiometric dating have been experimentally determined by physicists and chemists, as noted in the top chart of Figure 8.16. For example, Uranium-238 is a radioactive isotope (parent) found in crystals of the mineral zircon. It decays to Lead-206 (daughter) and has a half-life of about 4,500 million years (4.5 billion years).

To determine the age of an object, it must contain atoms of a radioactive decay pair that originated when the object formed. You must then measure the percent of those atoms that is parent atoms (**P**) and



Percent of Parent Atoms (P)	Percent of Daughter Atoms (D)	Half-lives Elapsed	Age
100.0	0.0	0	$0.000 \times T_{1/2}$
98.9	1.1	1/64	$0.015 \times T_{1/2}$
97.9	2.1	1/32	$0.031 \times T_{1/2}$
95.8	4.2	1/16	$0.062 \times T_{1/2}$
91.7	8.3	1/8	$0.125 \times T_{1/2}$
84.1	15.9	1/4	$0.250 \times T_{1/2}$
70.7	29.3	1/2	$0.500 \times T_{1/2}$
50.0	50.0	1	$1.000 \times T_{1/2}$
35.4	64.6	1 1/2	$1.500 \times T_{1/2}$
25.0	75.0	2	$2.000 \times T_{1/2}$
12.5	87.5	3	$3.000 \times T_{1/2}$
6.2	93.8	4	$4.000 \times T_{1/2}$
3.1	96.9	5	$5.000 \times T_{1/2}$

**FIGURE 8.16** Some isotopes useful for radiometric dating and their decay parameters. The half-life of each decay pair is different (top chart), but the graph and decay parameters (bottom charts) are the same for all decay pairs.



the percent that is daughter atoms (D). This is generally done in a chemistry laboratory with an instrument called a *mass spectrometer*. Based on P and D and the chart at the bottom of Figure 8.16, find the number of half-lives that have elapsed and the object's corresponding age in number of half-lives. Finally, multiply that number of half-lives by the known half-life for that decay pair (noted in the top chart of Figure 8.16).

For example, a sample of Precambrian granite contains biotite mineral crystals, so it can be dated using the Potassium-40 to Argon-40 decay pair. If there are 3 Argon-40 atoms in the sample for every 1 Potassium-40 atom, then the sample is 25.0% Potassium-40 parent atoms (P) and 75.0% Argon-40 daughter atoms (D). This means that 2 half-lives have elapsed, so the age of the biotite (and the granite) is 2.0 times 1.3 billion years, which equals 2.6 billion years.

### Questions

8. A solidified lava flow containing zircon mineral crystals is present in a sequence of rock layers that are exposed in a hillside. A mass spectrometer analysis was used to count the atoms of Uranium-235 and Lead-207 isotopes in zircon samples from the lava flow. The analysis revealed that 71% of the atoms were Uranium-235, and 29% of the atoms were Lead-207.
  - a. About how many half-lives of the Uranium-235 to Lead-207 decay pair have elapsed in the zircon crystals?
  - b. What is the absolute age of the lava flow based on its zircon crystals? Show your calculations.
  - c. What is the age of the rock layers beneath the lava flow?
  - d. What is the age of the rock layers above the lava flow?
9. Astronomers think that the Earth probably formed at the same time as all of the other rocky materials in our solar system, including the oldest meteorites. The oldest meteorites ever found on Earth contain nearly equal amounts of both Uranium-238 and Lead-206. Based on Figure 8.16, what is Earth's age? Explain your reasoning.
10. If you assume that the global amount of radiocarbon (formed by cosmic-ray bombardment of atoms in the upper atmosphere and then dissolved in rain and seawater) is constant, then

decaying Carbon-14 is continuously replaced in organisms while they are alive. However, when an organism dies, the amount of its Carbon-14 decreases as it decays to Nitrogen-14.

a. The carbon in a buried peat bed has about 6% of the Carbon-14 of modern shells. What is the age of the peat bed? Explain.

b. In sampling the peat bed you must be careful to avoid any young plant roots or old limestone. Why?

11. Layers of sand on a New Jersey beach contain common zircon crystals.
  - a. Could the zircon crystals be used to date exactly when the layers of sand were deposited? Explain.
  - b. Suggest a rule that geologists should follow when they date rocks according to radiometric ages of crystals inside the rocks.

## PART 8D: INFER THE GEOLOGIC HISTORY OF TWO FIELD SITES

### Questions

12. Refer to Figure 8.17.
  - a. What is the relative age of the sedimentary rocks in this rock exposure? Explain.
  - b. What is the absolute age of the sill? Explain.
  - c. Locate the fault. How much displacement has occurred along this fault?
  - d. Explain the geologic history of this region, starting with deposition of the sandstone and ending with the time this picture was taken. Use names of relative ages of geologic time and absolute ages in your explanation. *Assume that the fault occurred after emplacement of the sill.*
13. Carefully examine Figure 8.18, a surface mine (strip mine) in northeastern Pennsylvania's anthracite coal mining district. Describe the age and all of the events that have happened to the fossil plants from the time when they were alive to the time when they were exposed by bulldozers. *Your reasoning may differ from that of other students, because more than one inference is possible about the geologic history of the site. Be prepared to discuss your reasoning with other members of your class.*



# Homework Chapter 5 &6

✓ Published

 Edit

⋮

You can find this homework assignment as a file [ECON 202 HOMEWORK CHAPTERS 5& 6.docx](#) 

You can write your answers in the word document. You can submit a word document, and excel file, scanned hand-written answers or pictures of your work. Please let me know if you have any technical difficulties. Thanks, Francis

1. Price Elasticity and Total Revenue. Fill in the blanks for each price-quantity combination listed in the following table.

Now graph this relationship, making sure to label each axis. What relationship have you depicted?

Price	Quantity	Price Elasticity	Total Revenue (Price * Quantity)
\$9	1		
\$8	2		
\$7	3		
\$6	4		
\$5	5		
\$4	6		
\$3	7		
\$2	8		

2. Price Elasticity of Supply. Calculate the price elasticity of supply for each of the following combinations of price and quantity supplied. In each case, determine whether supply is elastic, inelastic, perfectly elastic, perfectly inelastic, or unit elastic.

- Price falls from \$2.25 to \$1.75; quantity supplied falls from 600 units to 400 units.
- Price falls from \$2.25 to \$1.75; quantity supplied falls from 600 units to 500 units.
- Price falls from \$2.25 to \$1.75; quantity supplied remains at 600 units.
- Price increases from \$1.75 to \$2.25; quantity supplied increases from 466.67 units to 600 units.

3. Income Elasticity of Demand. Calculate the income elasticity of demand for each of the following goods:

	Quantity Demanded when	Quantity Demanded when
--	------------------------	------------------------

	income is \$10,000	income is \$20,000
Good 1	10	25
Good 2	4	5
Good 3	3	2

*Hint: Good 1, use 10 as the old quantity and 25 as the new quantity, \$10,000 as the old income and \$20,000 as the new income.*

a. Are the goods normal goods? Inferior goods?

4. Utility maximization. The following tables illustrate Eileen's utilities from watching first-run movies in a theater and from renting movies online. Suppose that she has a monthly movie budget of \$36, each movie ticket costs \$6, and each video rental costs \$3.

Movies in Theater					Online Movies			
Quantity (Q)	Total Utility (TU)	Marginal Utility (MU)	MU/P		Quantity (Q)	Total Utility (TU)	Marginal Utility (MU)	MU/P
0	0	_____	_____		0	0	_____	_____
1	200	_____	_____		1	250	_____	_____
2	290	_____	_____		2	295	_____	_____
3	370	_____	_____		3	335	_____	_____
4	440	_____	_____		4	370	_____	_____
5	500	_____	_____		5	400	_____	_____
6	550	_____	_____		6	425	_____	_____
7	590	_____	_____					

a. Complete the tables.

b. Do these tables show that Eileen's preferences obey the law of diminishing marginal utility? Explain your answer.

c. How much of each good does Eileen consume in equilibrium?

d. Suppose the prices of both types of movies drop to \$1 while Eileen's movie budget shrinks to \$10. How much of each good does she consume in equilibrium?

5. Your company. Based on your selected company please answer the following questions:

- a. How responsive is the main product of your selected company to changes in prices? Is the main product of your selected company price elastic, inelastic, or unit elastic?
- b. How responsive is the main product of your selected company to changes in other products' prices? Is the main product of your selected company a substitute or a complement?
- c. How responsive is the main product of your selected company to changes in income? Is the main product of your selected company a normal good or an inferior good?

**Points** 50



**Submitting** a text entry box or a file upload

**Turnitin** Turnitin has been enabled for this assignment.

Due	For	Available from	Until
Sep 24	Everyone	Sep 13 at 11am	Sep 24 at 11:59pm

### Fall 2018 ECON 202 Chapter 5 & 6

You've already rated students with this rubric. Any major changes could affect their assessment results.

Criteria	Ratings			Pts
Elasticity	10.0 pts Full Marks	0.0 pts No Marks		10.0 pts
Identify elasticity and inelasticity	5.0 pts Full Marks	0.0 pts No Marks		5.0 pts
Income elasticity	5.0 pts Full Marks	0.0 pts No Marks		5.0 pts
Marginal utility	20.0 pts Full Marks	0.0 pts No Marks		20.0 pts
Identify elasticity for selected company	10.0 pts Full Marks	0.0 pts No Marks		10.0 pts
 Analyze, interpret and synthesize data to make managerial decisions. <a href="#">view longer description</a> threshold: 3.0 pts	5.0 pts Exceeds Expectations	3.0 pts Meets Expectations	0.0 pts Does Not Meet Expectations	--
 Exhibit effective oral and written communication skills related to management activities. <a href="#">view longer description</a> threshold: 3.0 pts	5.0 pts Exceeds Expectations	3.0 pts Meets Expectations	0.0 pts Does Not Meet Expectations	--
Total Points: 50.0				

## ECON 200- Assessment 1

We will be watching a series of 10 short videos (cartoons) that explain what an economy is and how economies can develop and grow. If you'll recall, I mentioned that some countries have rich resources, but no economic system in which to allocate those resources efficiently. The first video is an example of that:

[Foundations of Wealth Video 1 \(Links to an external](#)



[site.\)Links to an external site.](#)

Your assignment is to watch the video (it is just under 11 minutes) and summarize the main points. This assignment should be no more than one page typed and double spaced.

Turn your assignment in here by next Wednesday night.

**MATH 1614 Assessment**  
**Calculus I**

Please enter the number of students who fall into each category. Please use number of students, not percentages. You can submit a paper copy or enter your numbers in this spreadsheet.

Instructor: \_\_\_\_\_

Date: \_\_\_\_\_

Number of Students assessed: \_\_\_\_\_

<b>Essential Skill: Communication</b>	<b>Unacceptable</b>	<b>Acceptable</b>	<b>Target</b>
<i>Genre and Medium Awareness, Application, and versatility</i>	Students incorrectly identify and express mathematical definitions, terminology or mathematical models used to solve problems or solutions contains major errors that demonstrate a lack of conceptual understanding.	Students can correctly identify and express mathematical definitions, terminology or mathematical models to solve problems, but solutions contains minor errors of representation or calculation.	Students correctly identify mathematical definitions, terminology or mathematical models and solutions are correct and communicated effectively.
<b>Final Exam Question 2:</b> Find all discontinuities of a given piece-wise function.			
<b>Final Exam Question 3:</b> Using the definition, find the derivative of a function.			
<b>Essential Skill: Critical Thinking</b>	<b>Unacceptable</b>	<b>Acceptable</b>	<b>Target</b>
<i>Problem Setting.</i>	Students incorrectly gather and identify the mathematical formula(s) or theorem(s) needed to solve the problem.	Students correctly identify the appropriate mathematical formula(s) or theorem(s), but minor mathematical or conceptual errors are present.	Students correctly identify the appropriate mathematical formula(s) or theorem(s) with no mathematical or conceptual errors.
<b>Final Exam Question 7:</b> Find the equation of the tangent line to the function at a given point.			
<b>Final Exam Question 11:</b> Solve a related rates problem.			
<i>Evidence Acquisition and evaluation.</i>	Students use incorrect mathematical formula(s) or theorem(s) to solve the problem. Solutions lack sound mathematical logic or major mathematical or conceptual errors are present.	Students use mathematical formula(s) or theorem(s) to solve the problem, but minor mathematical, logical, or conceptual errors are present.	Students use the correct mathematical formula(s) or theorem(s) to correctly solve the problem and work is logically sound.
<b>Final Exam Question 9a:</b> Determine the intervals in which a function is increasing or decreasing. Determine all local extrema.			
<b>Final Exam Question 9b:</b> Determine the intervals in which a function is concave up or concave down. Determine all inflection points.			
<i>Reasoning/Conclusion</i>	Students incorrectly identify the appropriate solution to the problem as a result of major conceptual or mathematical errors.	Students correctly identify the appropriate solution to the problem, but minor conceptual or mathematical errors are present.	Students correctly identify and/or communicate the appropriate solution to the problem with no conceptual or mathematical errors.
<b>Final Exam Question 10:</b> Solve a maximization problem.			

Clovis Community College  
**ENG 211-3N7 (CC# 1410) INTRODUCTION TO LITERATURE**  
2<sup>nd</sup> eight weeks Spring, 2019

INSTRUCTOR:

OFFICE:

OFFICE PHONE:

OFFICE HOURS: Mon 3:00-5:00; Tue 1:30-4:30; Wed 1:30-3:00; Thur and Fri by apt.

E-MAIL: Communicate with me through the email feature of Canvas. If Canvas is down, try.....

**I will check and respond to all mail messages at least four times a week, Sunday through Saturday, with no more than 72 hours between checking the system.**

**TEXTS:** *The Bedford Introduction to Literature* (B/StM) Eleventh Edition  
ISBN 978-1-319-00218-3

**NOTE:** All exams will be proctored. Students must make a satisfactory proctoring arrangement. (More information below.)

**COURSE DESCRIPTION:**

In this course, students will examine a variety of literary genres, including fiction, poetry, and drama. Students will identify common literary elements in each genre, understanding how specific elements influence meaning.

**COMMON COURSE STUDENT LEARNING OUTCOMES**

1. Read a selection of fictional, poetic or dramatic work.
2. Identify literary devices and conventions in selected pieces of fiction, poetry, drama, and film.
3. Use critical approaches and engage in discussions to analyze fiction, poetry, drama, and film.
4. Define the strengths, limitations, and distinctions of fiction, poetry, drama, and film.

**INSTITUTION-SPECIFIC STUDENT LEARNING OUTCOMES**

1. Analyze selected contemporary texts, social contexts of origin and reception, and the lives of authors, and examine the connections and intersections.

2. Prepare and deliver examples of poems designed to imitate literary poetry.
3. Engage in respectful and exploratory dialogue with peers.

**ONLINE COURSE ATTENDANCE:** In an online course, “attendance” is recorded when a student logs into class AND does at least one other action (such as turning in an assignment or posting a message). Simply logging in is not enough to count as “attendance.” Attendance is required at all sessions in each course for which the student is enrolled. Consult the college catalog for specific information regarding limits for absences. Students on financial aid and VA programs may have additional attendance requirements or restrictions. Check with the Financial Aid / VA Office for more information.

**CCC E-MAIL:** All CCC students have a CCC email account. It is set up when students enroll. Campus-wide messages and important information go to your CCC email inbox. To access student email, log onto Pathway, and click the Student Icon on the top-right.

**STARFISH:** Clovis Community College uses Starfish Early Alert as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service. To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at [www.clovis.edu/students/starfish.aspx](http://www.clovis.edu/students/starfish.aspx). If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

**WITHDRAW:** If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. Instructors do not withdraw students. Dual credit students must contact their high school counselor.

#### **QUALIFIED STUDENTS WITH DISABILITIES:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the [Special Services](#) Office (575-769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met.

#### **ONLINE TUTORING:**

CCC now offers free online tutoring in most academic subjects. Access BrainFuse through [Pathway](#) for a live online session with a professional tutor. Click [HERE](#) to see how to access Brainfuse online tutoring.

#### **COPYRIGHT:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer



software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

### **SAFEGUARDS:**

Back up all work in a memory device and make a hard copy; computers are not infallible. It is the student's responsibility to ensure that his/her computer is functioning properly.

**NETIQUETTE:** Netiquette is using good manners in cyberspace. Since most of our communication will be in text, be sure your words express the proper tone. Remember e-mail can be read by anyone. Making personal attacks or sending threats is unacceptable and will be reported per the guidelines up to and including administrative withdrawal from the course. Whether you are in a chat room, writing an e-mail or posting to a discussion area, remember to use proper netiquette and be considerate of others. If you would like to read more on the subject of netiquette, use the links below.

<http://www.iwillfollow.com/email.htm>

<http://www.albion.com/netiquette/corerules.html>

**EMERGENCY ALERT:** Since our class is online, service interruptions are very unlikely. In case of an unscheduled Canvas outage, please submit homework via email to my email address (listed above). However, in case of relevant campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

**TECHNOLOGY REQUIREMENTS:** Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please click here to see basic computer specifications for Canvas. Please keep in mind that computers are available for student use in the library.

**TECHNICAL SUPPORT:** CCC Help Desk support is available Mon – Fri, 8:00 am – 4:30 pm at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom.

You may also find answers to common questions / problems on [eCampus](#) and click on the tab titled "Technical Support." If the hyperlink does not work, please enter <http://www.clovis.edu/Type4.asp?pageid=ecindex> into your browser.

**PRMARORING INFORMATION:** Most online courses require a proctor for exams. The following are CCC approved proctor options:

- CCC's Testing Center (No fee for CCC students // ID required)
- Military Education Centers (may have a fee // DoD ID required)
- Testing Centers at other Colleges / Universities (may have a fee // ID required)
- PrMarorU (has a fee // webcam required // 2 forms of ID required)

If you live within 50 miles of Clovis, NM, you will be required to take your proctored exam at CCC's Testing Center or use ProctorU. If you live 51+ miles from Clovis, NM you may use any of the above proctor options. Students with a valid DoD ID card may use a military education center, if desired.

It is the student's responsibility to find a suitable proctor, make testing arrangements, and pay any associated fees for proctoring services. Be aware that ALL proctors require a valid photo ID, some proctors charge a fee, and some proctoring options require a webcam.

Dual credit students should contact their instructor for special instructions.

Students must report their proctor choice to their instructor. Please refer to your syllabus and instructor's directions for more details, deadlines, and further information. If you need CCC's Proctor Approval Form, it is linked in Online Course Information.

## ONLINE CLASS POLICIES

### VIEWING OF FILMS:

The viewing of specific films is a requirement of this class. These films are embedded in the course section. However, even using the embed, watching a film will require broadband and the time necessary to make it through the films. Some films may be better experienced in DVD or Blu-Ray, which students may wish to arrange for themselves.

### SUBMISSION OF ASSIGNMENTS:

You are responsible for getting and turning in all assignments on time. This setup of Canvas makes no exceptions, and if you are late trying to post your assignment, it will likely not accept it. Furthermore, we move way too fast in this class for late assignments. NOTE: If you have technical difficulties uploading your assignment into the course dropbox, send the project to me via the course email or college email (paul.nagy@clovis.edu). Any paper sent to me through these email addresses/ alternative means must have a proper time stamp for it to be read, but at least you need not lose hope due to a technical glitch. Although, choosing not to wait till the last minute will always serve you better, as most technical problems can be solved in a reasonable period of time.

### GRADING POLICY:

Your grade in English 211 online will tentatively be based on:  
Assigned essays and other projects      400 pts. (approx.)

Unit discussions	200 pts.
One midterm exam	150 pts (.)
One final exam	150 pts.
Approximate total	900 points possible 100%

The grading scale (a standard one) is as follows:

90-100% = A

80-89% = B

70-79% = C

60-69% = D

Below 60% = F

All written work submitted for a grade (including essays) must be double-spaced, 12-point font, with one-inch margins unless otherwise specified. MLA style is the default if questions arise.

I want all of my students to succeed, and I am willing to work with you toward that goal. Therefore, if any special circumstances arise for you during the semester, please talk to me about it.

Depending on the situation, I might advise you to drop the class, or perhaps we can work things out. *Communication is the key.*

#### **ACADEMIC DISHONESTY:**

Academic dishonesty is an act by a student to use and/or represent the work of other individuals as that of his or her own production and/or creation. Academic dishonesty is unacceptable within the campus and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor's evaluation of the severity of the dishonest act. Consult the college catalog for more information on the institutional policy on academic dishonesty.

#### **GENERAL INFORMATION:**

Check the current college academic calendar at [pathway.clovis.edu](http://pathway.clovis.edu) for information concerning course withdrawal deadlines.

### **Book Companion Site**

Bedford St Martin's, the publishers of the textbook for this class, have developed a companion website. It offers —abundant resources for students|| including a Virtualit Interactive Tutorial in Fiction, Poetry, and Drama. [www.bedfordstmartins.com/meyerlit](http://www.bedfordstmartins.com/meyerlit) I cannot recommend it enough.

### **English 211 – Schedule of Readings**

**NOTE: All readings are from Meyer, *The Bedford Introduction to Literature*.** Page numbers listed below refer to the first page of a reading or section in your text. **YOU ARE RESPONSIBLE FOR READING THE ENTIRE SELECTION IDENTIFIED in order to be able to participate, in an informed way, in the discussions, as well as complete the assignments.**

**Unit 1: *Studying Literature?***

Mar 19-23

Reading: Meyer 1-7.

**Unit 2: *Short Fiction***

Mar 23-27

**Reading:**

- ☐ —Reading Responsively: Meyer 13 -43 (includes Chopin, “The Story of an Hour”; Vander zee, “A Secret Sorrow” and Godwin, “A Sorrowful Woman”)
- ☐ —Plot: Meyer 66-75,
- ☐ —“A Rose for Emily,” Faulkner (+perspective) 77-85
- ☐ —Character: Meyer 107-1112
- ☐ —“Bartleby, the Scrivener,” Melville 129-156
- ☐ —“Young Goodman Brown,” Hawthorne 315-330
- ☐ --“The Horse Dealer’s Daughter,” Lawrence 557-568

**Unit 3: *Short Fiction, developed***

Mar 28- Apr 2

**Reading:**

- Setting, Meyer 159-161 —Point of View, Meyer 195-200
- Symbolism, Meyer 220-223
- Theme, Meyer 247-250
- Style, Tone, and Irony, Meyer 272-276
- “Soldier’s Home,” Hemingway 161-167
- “The Bride Comes to Yellow Sky,” Crane 251-258
- “Battle Royal,” Ellison 227-236
- “IND AFF,” Weldon 185-191
- “A Good Man is Hard to Find,” O’Connor 356-372

**ASSIGNMENT 1 distributed****Unit 4: *POETRY*****Reading:**

- Meyer, pp. 589-626, including all the poems
- Also: Bishop, “Manners,” 629-630
- Meyer, 635-651, including all the poems
- Slavitt, “Titanic,” p.654
- Brooks, “We Real Cool,” p.662
- Arnold, “Dover Beach,” pp. 674-675
- Owen, “Dulce et Decorum Est,” pp. 681-682
- Sandburg, “Chicago,” pp. 769-770 Roethke, “My Papa’s Waltz,” p. 772

**Unit 5: POETRY, developed**

Apr 10-16

**Reading:****☐ Poetic Forms pp. 775-800**o **Esp.** Herrick, "Upon Julia's Clothes" p. 777 o

Shakespeare, "My mistress' eyes..." p. 781

Alexie, "The Facebook Sonnet," p. 784

Thomas, "Do Not Go Gentle into that Good Night" p.786

**☐ Open Form pp. 801-816 Dickinson—pp.**

☐ 829-851

☐ Frost—pp. 865-887

**ASSIGNMENT 1 DUE****EXAM 1(Midterm exam) to be taken Apr 14-18 \*PROCTOR REQUIRED\*****Unit 6 —Drama**

Apr 19-27

**READING:**"Reading Drama Responsively," including *Trifles*, pp. 1079-1089 "AStudy of Sophocles," including *Oedipus the King*, 1120-1170 "AStudy of Shakespeare," and *Hamlet*, 1171-1180; 1237-1335.**Viewing:**Kenneth Branagh's *Hamlet* (1996)**Unit 7—Film**

Apr 28-May 3

**Reading:** *Heart of Darkness* link Required

Viewing:

*Citizen Kane**Apocalypse Now**Solaris***Final Exam —May 3-8****\*PROCTOR REQUIRED\***

## ENG 211-3N7 (CC# 1410) INTRODUCTION TO LITERATURE

RUBRIC for Writing Assignments

### Rubric for Writing Assignment

**50 points possible**

2-3 pages, double spaced, 12-point Times New Roman font, 1-inch margin

**Objectives:** Practice analysis of literary work.

**Key Points for Analysis:**

- Identify the reading by its title or author, or the particular discussion.)
- Make connections with your own experience and/or with other texts.
- How will you use this text to further your understanding of literature?

**Criteria** – Refer to the Instructions and Samples before submitting.

**Inclusion of Media file (if part of the assignment): 6 points \_\_\_\_\_/6\_**

Relevance, value to audience

**Depth of Analysis: 25 points \_\_\_\_\_/25\_\_**

Novice 0 (0%)–12 (25%) points

Demonstrates limited effort at engaging the reading and criticism.

Competent 13 (50%)–20 (75%) points

Demonstrates a conscious and thorough understanding of the work, its context, and subject matter.

Proficient 21 (80%)–25 (100%) points

Considers and evaluates the reading and criticism extensively.

**Use of Evidence: 15 points \_\_\_\_\_/15\_**

Novice 0 (0%)–5 (16%) points

Uses incomplete or vaguely-developed examples to support claims, with limited text-to-text, text-to-criticism, and text-to-self connections.

Competent 6 (30%)–11 (50%) points

Uses relevant examples from the texts studied to support claims. Makes insightful and applicable text-to-text and text-to-self connections.

Proficient 12 (66%)–15 (100%) points

Demonstrates a commitment to use the insights toward educational goals. Poses questions and challenges author claims.

**Conventions and Citations—10 points \_\_\_\_\_/10\_**

Novice 0 (0%)–3 (33%) points

Uses language that is vague or imprecise for the audience or purpose, with little sense of voice, and limited attempts to vary sentence structure. Exhibits frequent errors in spelling, verb tense, subject-verb agreement, punctuation, pronouns, and possessives. Appears to quote but includes no mention of source.

Competent 4 (40%)–6 (60%) points

Uses precise language with a sense of voice, awareness of audience, and varied sentence structure.

Demonstrates control of prose with few errors. Identifies sources with attempt to format.

Proficient 7 (70%)–10 (100%) points

Speaks and writes with authority. Uses language that is precise and engaging, with notable sense of voice, awareness of audience and purpose, and varied sentence structure. Demonstrates control of the conventions with essentially no errors, even with sophisticated language. Consistently and specifically identifies sources demonstrating mastery of format.







## EXERCISE TWELVE

### STREAMS AND GROUNDWATER

#### Objective:

1. To acquaint students with the variations and origins of different types of stream valleys and channels.
2. To understand the characteristics of streams and how they are interconnected.
3. To understand porosity and permeability of sediment.

#### Materials:

1. Pencil and eraser
2. Ruler
3. Calculator

#### Overview:

A stream is any body of water that flows in a natural channel. For a geoscientist, a river is simply a large stream. The word fluvial is often used in discussions about streams as an adjective meaning “having to do with streams or rivers”. The area occupied by the water in a stream is the stream’s channel. When a stream has multiple channels it is referred as a braided stream. A stream that has a curving course is a meandering stream.

The flow of a stream is driven by the force of gravity and because of this it is important to know the slope of a stream which is known as stream gradient. This can be helpful in determining certain characteristics of the stream. The stream gradient is calculated by dividing the change in elevation by the horizontal distance. Gradient is typically in ft./mi or m/km.

$$\text{Stream gradient} = \frac{\text{change in elevation}}{\text{horizontal distance}}$$

Another feature of streams is its discharge. Discharge is the volume of water that passes a particular point in a given period of time. Discharge is found from the dimensions of water-filled channel—that is, its cross-sectional area (A) and flow velocity (V). Discharge (Q) is then calculated with the formula  $Q = VA$  and is expressed in cubic meters per second ( $\text{m}^3/\text{sec}$ ) or cubic feet per second ( $\text{ft}^3/\text{sec}$ ). In most streams and rivers, the discharge will increase downstream as more and more water enters a channel. But there are exceptions.

#### Assignment 1:

This portion of the assignment is to introduce the student to gradient and discharge calculations. Figure 12.1 shows elevation of 4 points along a stream across the bottom. Then along the top shows horizontal distances marked out along the stream.

**On the following questions all work must be shown to get full credit. If using a calculator all calculations placed in the calculator must be shown on the paper. Answers alone will not be accepted for this assignment.**

1. Use the information in Figure 12.1 to calculate the gradient of the stream in the lower reaches.
2. Use the information in Figure 12.1 to calculate the gradient for the middle stretch of the stream.
3. Use the information in Figure 12.1 to calculate the gradient for the upper stretch of the stream.
4. Use the information in Figure 12.1 to calculate the gradient for the full length of the stream.

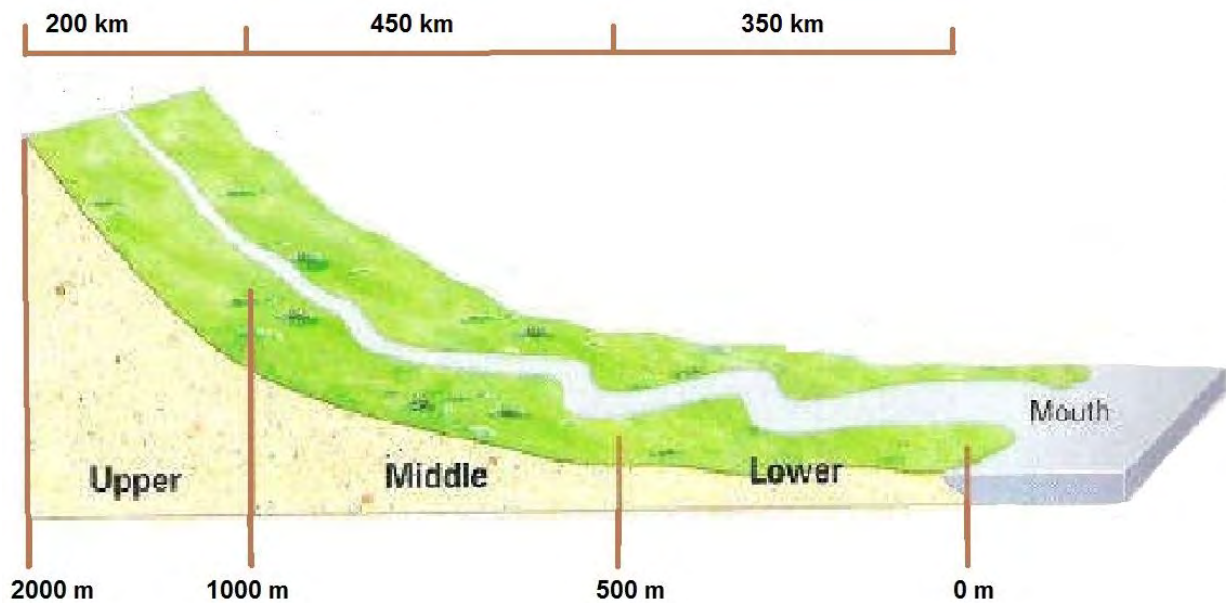


Figure 12.1 Gradient

Use Figure 12.2 to answer the following questions.

5. Calculate the cross-sectional area of the first stream in figure 12.2.
6. Calculate the cross-sectional area of the second stream in figure 12.2.
7. Calculate the cross-sectional area of the third stream in figure 12.2.

Use the velocity of 10m/sec and cross-sectional areas you calculated in questions 5-7.

8. Calculate the discharge for the first stream in figure 12.2.
9. Calculate the discharge for the second stream in figure 12.2.
10. Calculate the discharge for the third stream in figure 12.2.

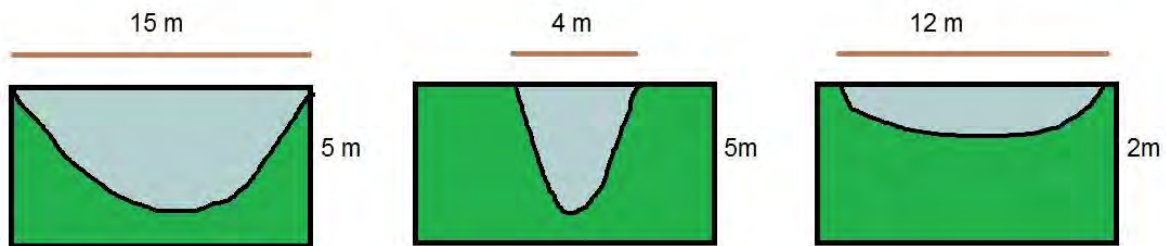


Figure 12.2 Cross-sectional area

### Surface water:

#### Assignment 2:

Your instructor will use the stream table to demonstrate the erosion cycle of a stream. First, you will see a young stream, with a float in it. You will need to assign one or two classmates to track the amount of time it takes the float to travel the length of the stream. You will also need three classmates to measure the width and depth of the stream in centimeters at three points along the stream. Lastly you will need one classmate to measure the length of the stream. This information will be recorded in the tables provided. This will be repeated a second time for a mature stream.

	Seconds Req. for the float to move the length of the stream	Stream velocity (cm/sec)	Stream Length (cm)
Reading			
1			
2			
3			
Average			

Table 12.1 Steam velocity and length (young stream)

Location	Width (cm)	Depth (cm)	Cross-sectional Area
HEAD			
MIDDLE			
MOUTH			
AVERAGE			

*Table 12.4 Width, Depth, Cross-sectional area. (young stream)*

	Seconds Req. for the float to move the length of the stream	Stream velocity (cm/sec)	Stream Length (cm)
Reading			
1			
2			
3			
Average			

*Table 12.3 Steam velocity and length (mature stream)*

Location	Width (cm)	Depth (cm)	Cross-sectional Area
HEAD			
MIDDLE			
MOUTH			
AVERAGE			

*Table 12.4 Width, Depth, Cross-sectional area. (mature stream)*

1. Calculate the water velocity in centimeters per second in Tables 12.1 and 12.3. Also, complete the averages.
2. Calculate the cross-sectional area in tables 12.2 and 12.4. Also, complete the averages.
3. Why does a stream begin to meander in early maturity?

4. How would you be able to distinguish a young stream from a mature stream in a topographic map?
5. What is the lowest level or base level to which a stream can be cut?
6. Calculate the discharge for the young stream.
7. Calculate the discharge for the mature stream.

**Groundwater:**

Groundwater is the water that fills open spaces in rocks, sediment, and soil beneath the Earth's surface. Groundwater and the rock it moves through is called an aquifer. Groundwater is one reservoir in the hydrologic cycle and accounts for approximately 22% of the world's supply of freshwater. Water can move between the grains of a rock due to porosity (Figure 12.3), which is defined as the amount of space between grains in the rock. The efficiency with which rock transmits water is called the rock's permeability. Permeability is expressed in units called "Darcy's." Porosity is expressed as a percent. It is calculated by dividing the volume of empty spaces in the rock by the total volume of the rock.

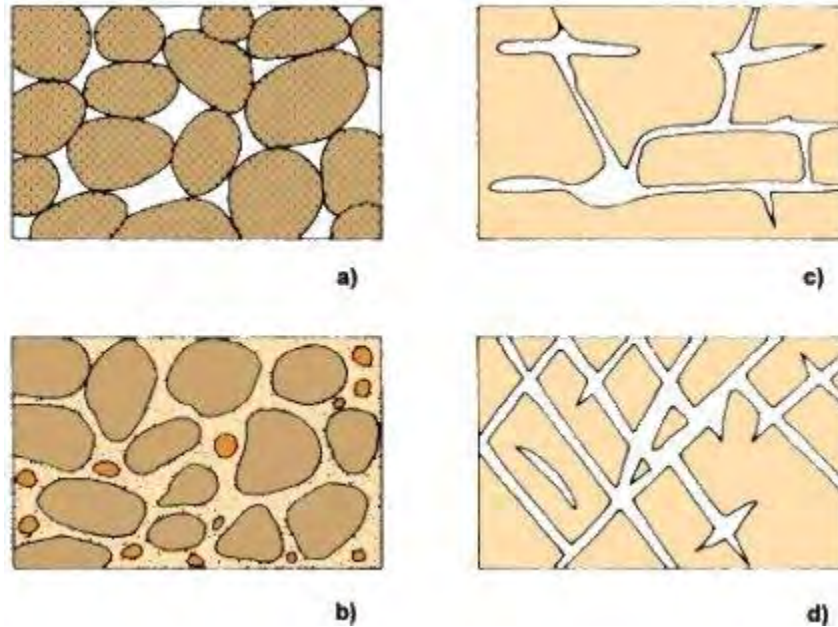


Figure 12.3 Porosity. a.) A well-sorted sediment and has a high porosity. b.) a poorly sorted sediment and has a lower porosity. c. A soluble rock such as limestone, in which porosity can be increased by solution. d.) crystalline metamorphic and igneous rocks can be rendered porous by fracturing.

### Assignment 3:

Calculate the porosity of these sediments. Remember to divide the volume of pore space by the total volume of the sample. Your number should be a decimal that you will convert into a percent. All volumes are in cubic centimeters.

Material	Total Volume	Pore Space Volume	Percent Porosity
Gravel	500	210	
Unconsolidated Sand	600	270	
Sandstone 1	650	163	
Sandstone 2	800	40	
Clay	825	404	
Shale	435	57	
Limestone	950	123	
Un-fractured Granite	500	5	
Fractured Granite	700	35	

Table 12.5 Porosity

1. Calculate the porosity of the materials in Table 12.5 completing the table.
2. What material in table 12.5 is likely to have a low permeability? Explain.
3. What material in table 12.5 is likely to have a high permeability? Explain.
4. Of the materials listed in table 12.5 which would make for the best aquifer? Explain.



## INTRODUCTORY PLANT SCIENCE

### AGRO 100G/ HORT 100G

#### Essay Writing Assignment:

To fulfill the writing component of the class, familiarize yourself with the NMSU library system, and learn more about agriculture and horticulture, you will submit an essay on a chosen topic. The objective of this assignment is to help develop critical thinking skills including but not limited to ability to 1) identify a problem and justify its importance; 2) acquire evidence about various aspects of the problem; 3) evaluate the evidence acquired; and 4) draw valid conclusions based on the evidence. You will be provided with a training session at NMSU library to guide you in the process.

A good approach to writing the essay would be to identify and present the issue, research and present multiple viewpoints on the issue, and provide the best solution or viewpoint to draw conclusion based upon your research or opinion. Specifically, your paper must include and will be evaluated on the important component skills of critical thinking as discussed above:

- 1) Problem setting: how did you identify the problem and give background information justifying why the problem is important.
- 2) Evidence acquisition: what evidence did you acquire through your research on the related problem.
- 3) Evidence evaluation: how did you evaluate the evidence by synthesizing the information presented.
- 4) Reasoning and conclusion: what conclusions did you draw based on your research on the problem.

The paper should be at least six pages long (double spaced, 1" margins, typical font type, and font size of 12), **not** including bibliography, figures, maps, etc. You must use a minimum of 10 recent (past 10 years) references, half of which can be from authentic online sources. A grading rubric will be provided for more specific details. Plagiarism will be taken very seriously so **DO NOT DO IT!**

Submit your topic and paper drafts on due dates to get full credit:

Select a topic	Due date 1*	10 pts. (*approved within a week)
Rough draft due	Due date 2	40 pts. - edits provided in 2 weeks
Final draft due	Due date 3	50 pts.- edits provided in 2 weeks
<b>100 pts total</b>		

**Below are some examples of topics for the essay assignment. You could choose any of these (first come, first serve):**

"How should genetically modified plants be managed and how will they affect humankind?"

"How will global warming affect plants on Earth and how will plants affect global warming?"

"On a global scale, how can an ever expanding population be fed while reducing soil erosion, reducing new land development, and preserving natural ecosystems?"

"In the Mesilla Valley of New Mexico, how can crop production agriculture be sustained with increased domestic and international competition, decreasing resources, and increased urbanization?"

"With the recent food safety scares involving fresh produce, how can we ensure that produce is safe to eat?"

"Should corn be grown for ethanol fuel and what effect will increased corn production have on commodity prices, fuel costs, energy dependence, and the environment?"

"Why does steer manure smell so bad when it's fresh and so "sweet" when it's composted?"

"Organic or conventional grown produce, which is better and why?"

"With the increased prices for farm commodities such as corn, wheat, soybeans, etc., should U.S. farm subsidies and price supports continue? Why or why not?"

"If the human population keeps growing and arable farmland keeps decreasing at their current rates, when will we run out of food?"

"Is the US agriculture really feeding the world?"

"Why do we grow different crops in New Mexico than in Pennsylvania?"

**AGRO/HORT 100G ESSAY WRITING ASSIGNMENT- FIRST DRAFT GRADING RUBRIC**

Name \_\_\_\_\_ (40 points possible)

CRITERIA		GRADERS'S ASSESSMENT
<b>Introduction/Problem Setting</b>  5 points	<ul style="list-style-type: none"> <li>○ At the top of the first page give a clear title to your paper</li> <li>○ Discuss the topic- your approach- a summary of how you will work on your topic</li> <li>○ Did you provide relevant background information?</li> <li>○ Why is your topic important?</li> <li>○ Why did you choose this topic?</li> </ul>	
<b>Information/ Evidence acquisition</b>  10 points	<ul style="list-style-type: none"> <li>○ Common perception about your topic</li> <li>○ What questions did you have to answer first?</li> <li>○ What information did you provide on various aspects of the topic?</li> <li>○ Did you thoroughly research and summarize your topic?</li> <li>○ Did you provide sufficient information</li> </ul>	
<b>Evidence evaluation/synthesis of the information</b>  10 points	<ul style="list-style-type: none"> <li>○ How well you synthesized the information</li> <li>○ Did you include diverse viewpoints about the problem?</li> <li>○ How balanced your approach was while analyzing the evidence?</li> </ul>	
<b>Conclusions</b>  5 points	<ul style="list-style-type: none"> <li>○ How well did you reason?</li> <li>○ Based on your information, what are your conclusions?</li> <li>○ Are your conclusions based on evidence provided?</li> </ul>	
<b>Technical considerations</b>  5 points	<ul style="list-style-type: none"> <li>○ Are there at least six (6) double spaced pages, <b>NOT</b> including your references etc.?</li> <li>○ 1" margins, normal font, and 12 point size?</li> <li>○ Do you have at least ten (10) references, half of which can be from authentic online sources?</li> <li>○ Are your references recent (past 10 years)?</li> <li>○ Are all quotes and borrowed ideas referenced in the text?</li> <li>○ Did you follow the CBE/CSE citation style format (either Name-Year or Citation-Sequence)?</li> <li>○ Citation Builder: <a href="http://www.lib.unc.edu/house/citationbuilder/">http://www.lib.unc.edu/house/citationbuilder/</a></li> </ul>	
<b>Overall quality</b>  5 points	<ul style="list-style-type: none"> <li>○ Professional appearance</li> <li>○ Did you include a picture of your crop?</li> <li>○ Would a picture help illustrate important points?</li> <li>○ Are the pictures properly referenced or did you draw them yourself? (you still must reference your inspiration source)</li> <li>○ Did you submit the essay on time</li> </ul>	

**AGRO/HORT 100G ESSAY WRITING ASSIGNMENT- FINAL DRAFT GRADING RUBRIC**

Name \_\_\_\_\_ (50 points possible)

CRITERIA		GRADERS'S ASSESSMENT
<b>Introduction/Problem Setting</b>  5 points	<ul style="list-style-type: none"> <li>○ At the top of the first page give a clear title to your paper</li> <li>○ Discuss the topic- your approach- a summary of how you will work on your topic</li> <li>○ Did you provide relevant background information?</li> <li>○ Why is your topic important?</li> <li>○ Why did you choose this topic?</li> </ul>	
<b>Information/ Evidence acquisition</b>  10 points	<ul style="list-style-type: none"> <li>○ Common perception about your topic</li> <li>○ What questions did you have to answer first?</li> <li>○ What information did you provide on various aspects of the topic?</li> <li>○ Did you thoroughly research and summarize your topic?</li> <li>○ Did you provide sufficient information</li> </ul>	
<b>Evidence evaluation/synthesis of the information</b>  10 points	<ul style="list-style-type: none"> <li>○ How well you synthesized the information</li> <li>○ Did you include diverse viewpoints about the problem?</li> <li>○ How balanced your approach was while analyzing the evidence?</li> </ul>	
<b>Conclusions</b>  10 points	<ul style="list-style-type: none"> <li>○ How well did you reason?</li> <li>○ Based on your information, what are your conclusions?</li> <li>○ Are your conclusions based on evidence provided?</li> <li>○ Are your efforts apparent?</li> </ul>	
<b>Technical considerations</b>  5 points	<ul style="list-style-type: none"> <li>○ Are there at least six (6) double spaced pages, <b>NOT</b> including your references etc.?</li> <li>○ 1" margins, normal font, and 12 point size?</li> <li>○ Do you have at least ten (10) references, half of which can be from authentic online sources?</li> <li>○ Are your references recent (past 10 years)?</li> <li>○ Are all quotes and borrowed ideas referenced in the text?</li> <li>○ Did you follow the CBE/CSE citation style format (either Name-Year or Citation-Sequence)?</li> <li>○ Citation Builder: <a href="http://www.lib.unc.edu/house/citationbuilder/">http://www.lib.unc.edu/house/citationbuilder/</a></li> </ul>	
<b>Overall quality</b>  5 points	<ul style="list-style-type: none"> <li>○ Professional appearance</li> <li>○ Did you include a picture of your crop?</li> <li>○ Would a picture help illustrate important points?</li> <li>○ Are the pictures properly referenced or did you draw them yourself? (you still must reference your inspiration source)</li> <li>○ Did you submit the essay on time</li> </ul>	
<b>Revision</b> 5 points	<ul style="list-style-type: none"> <li>○ Did you address all the edits that you received on your first draft?</li> <li>○ Did you submit your edited first draft along with the final draft?</li> <li>○ Did you turn in your final draft by the due date?</li> </ul>	

SYLLABUS FOR BIOLOGY FOR HEALTH SCIENCES (LECTURE AND LAB)  
BIOL 1140 AND BIOL 1140L  
SPRING 2019

**INSTRUCTOR:** Dr. Lynn Haugen  
**E-MAIL:** lhaugen@wnmu.edu

**OFFICE:** Harlan Hall 143 (575.538.6202)  
**OFFICE HOURS:** TWTH 2:30-4:30PM

**REQUIRED LECTURE TEXT.** *Biology: Life on Earth with Physiology*, 10<sup>th</sup> ed. (ISBN 978-0-321-79426-0) by Audesirk, T., G. Audesirk, and B.E. Byers. Pearson Education, Inc., San Francisco, 2014. Copies of the textbook are on reserve in WNMU library.

**REQUIRED LAB MANUAL.** *Biology for Health Sciences Laboratory Manual* (available at **Copies on the Run** located on the corner of N. Grant and 12<sup>th</sup> St.)

**COURSE DESCRIPTION.** This introductory biology course for students interested in health science careers focuses on the concepts of chemistry, cell biology, metabolism, genetics, and regulation of gene expression. In the associated laboratory, students will learn skills involved in scientific measurement, microscopy, and mathematical analysis. Students will also perform experiments and data analysis related to cell structure and function, chemistry, enzyme activity, and genetics.

**STUDENT LEARNING OUTCOMES (LECTURE).**

1. Explain the central ideas and process of biology, including the organization of life, evolution, selection and adaptation, and application of the scientific method.
2. Apply basic chemistry to the biology of cells.
3. Describe the structures and functions associated with eukaryotic cells and compare/contrast to prokaryotic cells.
4. Describe the components and mechanisms of cellular metabolism.
5. Explain the central dogma of genetic flow, including structures and functions of DNA and RNA, processes involved in DNA replication, RNA transcription, and translation, genetic mutations, and mechanisms of gene transfer.
6. Explain the relationships between sexual reproduction, genetic diversity and inheritance.
7. Describe and contrast the processes of mitosis and meiosis.
8. Describe patterns of inheritance and human genetic disorders.
9. Explain homeostasis and identify major tissues, organs and organ systems and their function.

**STUDENT LEARNING OUTCOMES (LAB).**

1. Explain the scientific method and use it develop and test a hypothesis.
2. Analyze and interpret graphical data.
3. Demonstrate use of laboratory equipment to perform scientific measurements.
4. Demonstrate skills used in microscopy.
5. Distinguish between eukaryotic and prokaryotic cells, including their structures and functions.
6. Describe selective permeability of membranes and movement of water and molecules across membranes by diffusion and osmosis.
7. Describe the structure and function of enzymes.
8. Describe the structure of DNA and the flow of genetic material in a cell from DNA to RNA to proteins.
9. Describe the processes of mitosis and meiosis.
10. Predict the inheritance of genetic traits.

Schedule of Topics and Exam Dates:

Date week of...	Lecture Topics	Laboratory Exercises	Textbook Chapters
	<b>Life on Earth</b>		
14 Jan	Introduction to Life on Earth	Lab 1. What is Life?	1
21 Jan	Atoms, Molecules, and Life	Lab 2. Introduction to Microscopes	2
28 Jan	Biological Molecules	Lab 3. Energy In/Energy Out	3, 34.1
4 Feb	Energy	Lab 4. Enzymes	6
11 Feb	Photosynthesis and Respiration	Lab 5. Photosynthesis	7, 8
	exam 1 – Thursday, 14 February		
	<b>Cell Biology</b>		
18 Feb	Cell Structure and Function	Lab 6. The Cell	4
25 Feb	Cell Membrane Structure and Function	Lab 7. Diffusion and Osmosis	5
4 Mar	Cellular Reproduction	Lab 8. Mitosis	9, 41.1
18 Mar	Cellular Reproduction	Lab 9. Meiosis	9
	exam 2 – Thursday, 21 March		
	<b>Inheritance</b>		
25 Mar	Introduction to Genetics	Lab 10. Probabilities	10
1 Apr	Mendelian Genetics	Lab 11. Genetics	10
8 Apr	DNA and Gene Expression	Lab 12. DNA and Protein Synthesis	11, 12
	exam 3 – Thursday, 11 April		
	<b>Animal Physiology</b>		
15 Apr	Introduction to Animal Physiology	Lab 13. Histology	
22 Apr	Animal Physiology	Lab 14. Physiology	31, 42.3
29 Apr	Defense Against Disease	Review	32-40
	Final Exam – Tuesday, 7 May at 7:30-9:30am		

**IMPORTANT DATES.**

Friday, 18 January – last day to drop

Friday, 5 April – last day to withdraw

## EVALUATIONS.

**Lecture Quizzes.** You will be given *at least* 22 quizzes. Each quiz will be worth 5 points for a total of 100 points (the lowest quiz scores will be dropped). These quizzes (and these quizzes only) are open note.

**Lecture Exams.** There will be three exams (100 points each) and a final exam (200 points). Each of the first three exams will consist of multiple choice and true/false questions worth two points each and several short answer/matching/fill in the blank questions. An overwhelming majority of material on the tests will come from lecture. **The final exam will be cumulative** and will consist of multiple choice and true/false questions.

**Lab Participation.** Each lab consists of laboratory exercises to be completed during the lab period, unless otherwise noted. At the end of each of these labs, you will turn in your completed exercises for a possible 12 points. Your two lowest laboratory exercise scores will be dropped so that the total points possible for the laboratory exercises will be 156 points. If you miss a lab for any reason, your score for that lab will be 0 and may count as one of the two dropped scores.

**Lab Quizzes.** A quiz will be given during the first 10 minutes of every lab, with the exception of the first lab meeting. For this reason, it is important that you arrive to lab on time so that you will have the full 10 minutes to work on the quiz. Each quiz will be worth 12 points. A total of 13 lab quizzes will be given and your lowest two quiz scores will be dropped so that the total points possible for the quizzes will be 144 points. If you miss a quiz for any reason (including coming late to lab), your quiz score for that lab will be 0 and may count as one of your dropped quiz scores.

Point Distribution		Grade Distribution	
20 lecture quizzes (5 points each)	100	<b>A</b>	89.5% and above
3 exams (100 points each)	300	<b>B</b>	79.5% - 89.4%
final exam	200	<b>C</b>	69.5% - 79.4%
labs (lab scores and quizzes)	300	<b>D</b>	59.5% - 69.4%
<b>TOTAL</b>	<b>900</b>	<b>F</b>	59.4% and below

**GRADING.** Your grade, at the end of the semester, will be calculated such that 2/3 of your overall grade will be determined by the lecture and 1/3 by points earned in lab. There will be **no** extra credit available at the end of the semester, so *please* don't ask.

**ATTENDANCE.** You are expected to attend ALL lecture meetings and ALL labs. Because attendance is critical for your success in this course, you will be withdrawn from the course if you miss the equivalent of more than two weeks of the semester (i.e., more than two labs and/or more than four lectures). If you withdraw before the 5 April deadline, you will receive a W on your transcripts. If you are withdrawn from the course after that date, you will receive an F.

**MAKE-UP POLICY.** There will be **no** make-ups!!! This includes lecture and lab quizzes as well as exams (see below for information on how to "make-up" a missed exam). If you are late or miss a quiz for *any* reason, you will not be allowed to make it up (that's why I drop the lowest scores).

**IMPROVEMENT POLICY.** If you have not missed any of the first three exams, you can replace your lowest exam grade with your score on the corresponding part of the final. If you miss an exam, your score on the corresponding part of the final will be used to determine the missing grade (this is your

opportunity to “make-up” an exam). This is good for one missed exam only! If you miss the first two exams, you will need to withdraw from the course or receive an F.

**ACADEMIC INTEGRITY.** *Academic misconduct of any kind will not be tolerated.* Violations of academic integrity include “any behavior that misrepresents or falsifies a student’s knowledge, skills or ability with the goal of unjustified or illegitimate evaluation or gain” (WNMU Faculty Handbook). Suspected involvement in cheating (“using or attempting to use unauthorized materials...and unauthorized collaboration with others, copying the work of another or any action that presents the work of others to misrepresent the student’s knowledge” [WNMU Faculty Handbook]) or plagiarism (“the intentional or unintentional representation of another’s work as one’s own without proper acknowledgement of the original author or creator of the work” [WNMU Faculty Handbook]) will be reported to the appropriate authority immediately and may result in penalties ranging from a zero on the assignment or quiz to expulsion from the college. It is your responsibility as the student to familiarize yourself with the specifics of what constitutes academic misconduct. Additional precaution: you may not leave the room during an exam - you may leave only *after* you have turned in the exam.

**DISABILITY SERVICES AT WESTERN NEW MEXICO UNIVERSITY.** Services for students with disabilities are provided through the Student Health Center’s Disability Support Services Office located in the Juan Chacon Building, Room 221. Some examples of the assistance provided are: audio materials for the blind or dyslexic, note takers, readers, campus guides, audio recorders, and a quiet testing area. In order to qualify for these services, documentation must be provided by certified health care professionals. Disability Support Services forms are available in the First Year Experience Office located in the Juan Chacon Building and in the Student Health Services Office in Muir Heights 111. The Disability Support Services Office serves as Western New Mexico University’s liaison for students with disabilities. The Disability Support Services Office can be contacted by phone at (575) 538-6400 or e-mail at [dss@wnmu.edu](mailto:dss@wnmu.edu). If you have a disability that may prevent you from fully demonstrating your abilities in this course, you should contact disability support services as soon as possible to discuss accommodations necessary to ensure full participation and to facilitate your educational opportunities.

**WNMU COMMUNICATION POLICY.** WNMU’s communication policy requires that all official communication be sent via Mustang Express. Although most information pertaining to this course will be posted on Canvas, all emails related to your enrollment at WNMU will be sent to your [wnmu.edu](mailto:wnmu.edu) email address. It is very important that you access your Mustang Express e-mail periodically to check for correspondence from the University. If I need to reach you, I will also use your WNMU address. If you receive most of your email at a different address you can forward your messages from Mustang Express to your other address. For directions on how to forward mail, go to <http://www.wnmu.edu/campusdocs/direction%20for%20forwarding%20email.htm> (although I don’t recommend that you forward your wnmU mail to another account because forwarded messages often get lost in cyberspace).

**INCLEMENT WEATHER.** In the event that campus is closed during our scheduled class time, I will send an email through Canvas with updates and announcements specific to this class.

**COPYRIGHT ©.** The materials found in this course are only for the use of students currently enrolled in this course for purposes associated with this course and may not be retained by students in any electronic form or further disseminated or distributed.



**CLOVIS COMMUNITY COLLEGE**  
**United States History I-HISTORY**  
**1110 FALL 2019**

**Instructor:**

**Office:**

**E-mail:**

**Office Hours:**

**Required Texts:**

Kennedy, David M. and Cohen, Lizabeth. **The American Pageant**. Cengage Learning, Seventeenth Edition, 2020, Volume I.

**Course Website:**

<http://www.clovis.edu/faculty/michaelpowers.aspx> select your class for syllabus/class schedule, lecture/chapter outlines, test essays, map identification/blank maps for tests, and other study aides.

**Course Description:**

The primary objective of this course is to serve as an introduction to the history of the United States from the pre-colonial period to the immediate aftermath of the Civil War. The elements of this course are designed to inform students on the major events and trends that are essential in the understanding of the development of the United States within the context of world societies.

**Student Learning Outcomes:**

*Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries for the history of the United States from the pre-colonial period to the immediate aftermath of the Civil War.*

*Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.*

*Students will summarize and appraise different historical interpretations and evidence in order to construct past events.*

*Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluating credibility, perspective, and relevance.*

*Students will create well-supported historical arguments and narrative that demonstrate an awareness of audience.*

*Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.*

**Course Goals:**

*To identify the individual role of the economy, society, government, religion, and culture in American history*

*To discuss the factors and influences that combined to create an American society*

*To recognize the path to revolution and how it affected the development of a new American republic*

*To analyze the development of a strong central government, opposing political parties, the rise of democracy, and how each changed the fabric of the American republic*

*To trace the effects of industrialization, a southern slave economy and society, westward expansion, and how each contributed to growing sectionalism and its consequences*

*To explain the impact of reform movements, especially abolitionism, on the American psyche and how slavery and the importance of political power in the national government led to a civil war*

**Attendance Requirements:**

Attendance is required at all sessions in each course. When circumstances make attendance impossible, students should notify the instructor of their absence. Students are responsible for making sure they are caught up with the class lectures and assignments, so they are able to attend the next class session prepared.

**An excused absence will occur when the student contacts the instructor before the start of that class or a medical, family, or work emergency occurs. An unexcused absence will occur when the student does not contact the instructor of his/her absence before the start of that class. More than four unexcused absences by a student during the semester will drop the student's final grade one letter grade or 10 points. A final grade of 95-A will become an 85-B. An 85-B will become a 75-C.**

**Withdraw:**

If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. **Instructors do not withdraw students.** Dual credit students must contact their high school counselor.

**CCC E-mail:**

The instructor will not communicate with students via CCC e-mail. Students may use their individual e-mail account to contact the instructor at [michael.powers@clovis.edu](mailto:michael.powers@clovis.edu)

**Canvas Shell:**

Since all courses have a Canvas shell and all faculty are required at a minimum to maintain a grade book in Canvas, indicate how the Canvas shell will be used in your course. This can include supplemental information that will be provided for students, information on submitting assignments, HelpDesk information, etc.

**Technology Requirements:**

Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please [click here](#) to see basic computer specifications for Canvas.

**Starfish:**

Clovis Community College uses **Starfish Early Alert** as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit "Starfish for Students" at <http://www.clovis.edu/students/starfish.aspx>. If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

**Grading Policy:**

The final grade for this class will come from **three** hourly exams that include sixty multiple choice questions, three historical maps, and two essay questions (**110 pts. possible**). Each hourly test is worth one hundred points. The final exam will be comprehensive and objective and will be composed of one hundred multiple choice questions. The final exam is worth one hundred points.

Make up exams will **only** be given due to normal circumstances of sickness, job related problems, and unforeseen emergencies, or personal and family responsibilities. **No** make up exam will be given without prior notice of the student's absence during an hourly exam and has to be taken prior to the next class meeting. will be given without prior notice of the student's absence during an hourly exam. Students are encouraged to take any hourly or final exam early if he or she cannot be present in class on the test date.

Extra credit will compose of video presentations that not only will serve as extra credit assignments, but will also be useful to students in understanding the material contained in each hourly exam. There will be **three** extra credit videos shown during the length of the class. Only a maximum of **fifteen** points may be accumulated by each individual student.

<b>One Final Exam</b>	<b>100 points</b>
<b>Three Hourly Exams</b>	<b>300 points</b>
<b>Total points</b>	<b>400 points</b>

#### **Final Grading Scale**

<b>A</b>	<b>360-400</b>
<b>B</b>	<b>320-359</b>
<b>C</b>	<b>280-319</b>
<b>D</b>	<b>240-279</b>
<b>F</b>	<b>239-</b>

#### **Qualified Students With Disabilities:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

#### **Copyright:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

#### **Emergency Alert:**

In case of campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave)

#### **Academic Dishonesty:**

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the college catalog. Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor's evaluation of the severity of the dishonest act. Consult the [college catalog](#) for more information on the institutional policy on academic integrity.

**Technical Support:**

CCC Help Desk (Room 119) support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom. You may also find answers to common questions / problems on [Canvas FAQs](#). To see the Help Desk hours of operation, please visit <http://www.clovis.edu/helpdesk/>.

**Computers on Campus:**

Computers for student use are available on campus in the [Center for Student Success](#) (room 171). Please call 575.769.4095 for more information. The Center is open Monday-Thursday from 8 a.m. to 8 p.m. and 8 a.m. to 4:30 p.m. on Fridays. It is closed weekends and holidays.

The employees in the Center are there to assist students and faculty with computer functions such as power-up, keyboard operations, printer operations, and software problem determination. They are not expected, however, to instruct students or be a substitute for a faculty member. Any help from assistants should be considered a suggested solution and may be different from the solution expected by the instructor. When in doubt, CONTACT YOUR INSTRUCTOR

**General information:** Consult the current semester calendar for information concerning course withdrawal deadlines.

## Demonstrate Critical Thinking

	Superior	Competent	Emerging	Substandard
	4	3	2	1
<b>Understanding</b>	Exceptional understanding of situational content	Basic understanding of situational content	Some understanding of situational content	No understanding or an apparent misunderstanding of situational content
<b>Analyze Context &amp; Content</b>	Identifies most important elements of the situation (visually, symbolically, numerically, verbally, physically) & shows exceptional insight & observations, making relevant connections between ideas and applications	Identifies main elements of the situation (visually, symbolically, numerically, verbally, physically) & recognizes relevant connections between ideas and applications	Identifies some elements of the situation (visually, numerically, etc.); is aware of relevant connections between ideas and applications; much room for growth	Unable to identify any element of the situation nor make connections
<b>Process &amp; Reasoning</b>	Draws warranted fair-minded conclusions; Clearly justifies assumptions & explains reasoning	Draws rational conclusions, yet does not fully explain reasoning	Draws conclusions yet unable to justify; much room for growth	Unable to draw valid conclusions nor justify
<b>Conceptualization &amp; Creation</b>	Sophisticated creation synthesizes evidence, context/content, & process	Creation shows knowledge of content & analyzes content/evidence & process	Creation shows minimal understanding of context/content & process; much room for growth	Creation does not show understanding of context/content, process

## CHAPTER 18

# POPULATION DEMOGRAPHICS

### **OBJECTIVES**

Be able to do the following:

1. Define the following words in writing:  
crude birthrate                      crude death rate                      total fertility rate                      demography
2. Calculate and quantify annual rate of population change and doubling time.
3. Construct graphs to illustrate the relationships among population variables.
4. Discuss the relationship between survivorship probability and population size in humans.
5. Discuss personal and social ethics of human population growth.

## Equipment

Calculators

Computers with graphing capabilities may speed things up.

## Optional

None

## Potential Problems

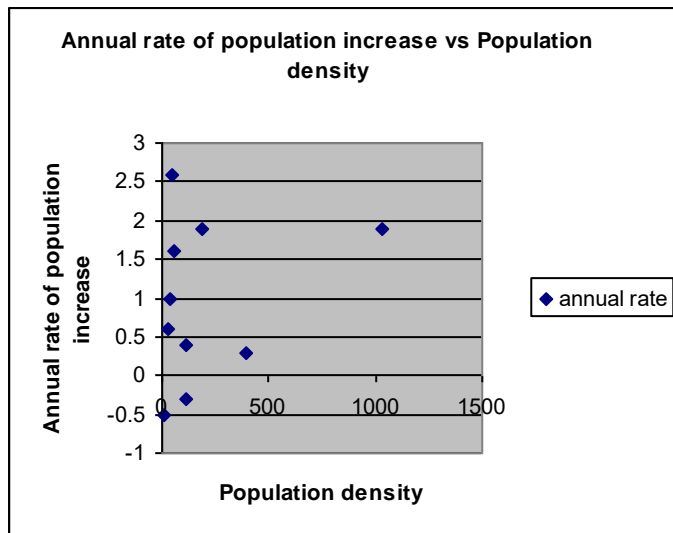
None other than math illiteracy.

**Calculate annual rate of population increase and doubling time. (5pts)**

Country	Population density (people per kilometer)	Total fertility rate	Crude birthrate (births per 1,000)	Crude death rate (deaths per 1,000)	Annual rate of population change (%)	Doubling time (years)
Afghanistan	119	6.8	47	21	2.6	26.9
Bangladesh	1,035	3.0	27	8	1.9	36.8
Dominican Republic	192	2.9	24	5	1.9	36.8
France	112	2.0	13	9	0.4	175
Hungary	108	1.3	10	13	(-0.3)	Population decreasing
Mexico	54	2.4	21	5	1.6	43.8
Netherlands	394	1.7	11	8	0.3	233.3
Russia	8	1.3	10	15	(-0.5)	Population decreasing
United States	31	2.1	14	8	0.6	116.7
Zimbabwe	34	3.8	31	21	1.0	70



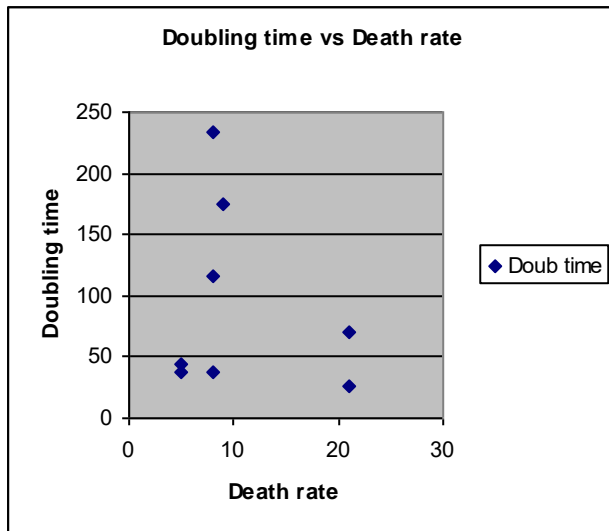
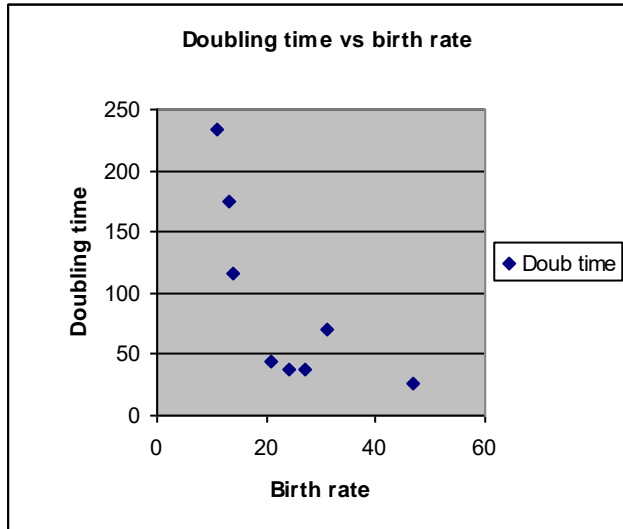
1. Plot the relationship between annual rate of population growth and population density on the graph below. (1pt)



Does the annual rate of population change appear to be related to population density? (1pt) **There is no obvious relationship between annual rate of increase and population density.**

Draw a graph of the relationship between the doubling time and the crude birthrate on the graph provided. (1pt)

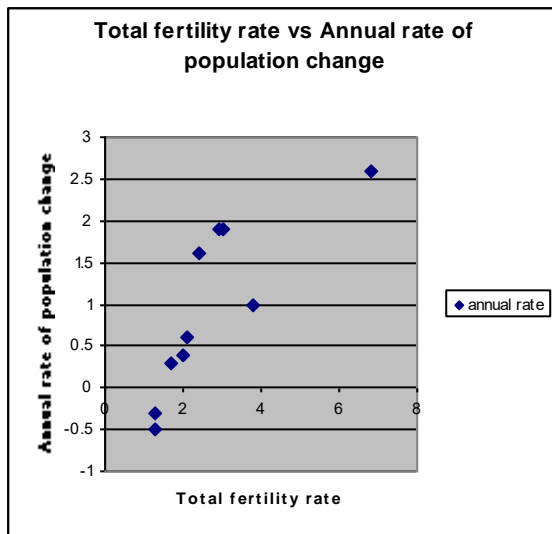
On the same graph plot the relationship between crude death rate and doubling time. (1pt)



2. Which of the two (birthrate or death rate) is most closely related to the doubling time? (1pt)

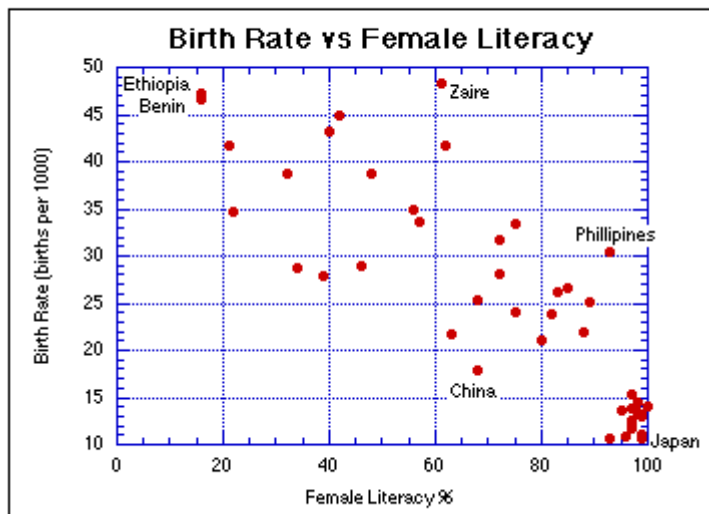
**Birthrate**

Plot the relationship between total fertility rate and annual rate of population growth on the graph below. (1pt)



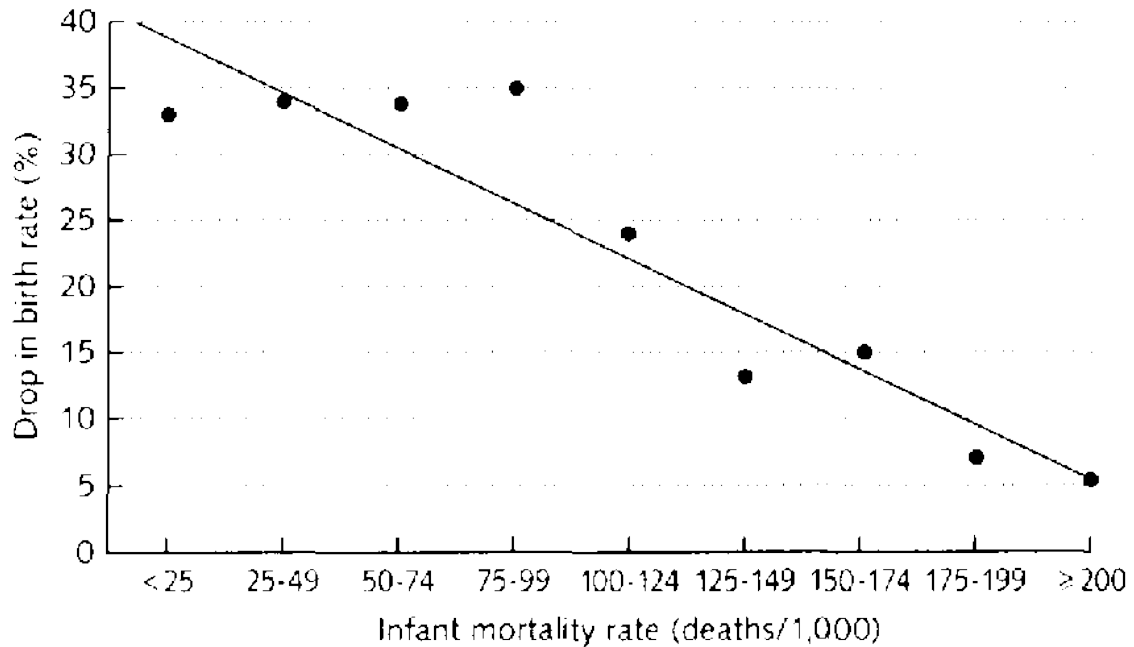
3. Is there a strong correlation between the number of births per woman and the annual rate of change? (1pt)

Yes



4. Given the above graph, is there a strong correlation between the number of births per woman and the percentage of women who are literate? (1pt)

Yes



5. Given the above graph, is there a strong correlation between the number of births per woman and infant mortality rate? (1pt)

**Yes**

6. Given all the above information, what changes in policy would slow the human birthrate? (2pts)

**Reduce child mortality by, in part, educating women**

- a. Knowing this, what can YOU do to slow human population growth? (1pt)

- b. Do you have a moral obligation to do so? Why or why not? (1pt)

7. What biological principle(s) explain these relationships? (1pt)

**Life history theory**

- a. Why?(2pts)

**There is a trade-off between number of offspring and probability of each offspring surviving. As the probability of each offspring surviving increases, individuals have fewer kids.**

## Demonstrate Critical Thinking

	Superior	Competent	Emerging	Substandard
	4	3	2	1
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SYLLABUS FOR ANIMAL FORM, FUNCTION, AND DIVERSITY (LECTURE AND LAB)  
BIOL 2644 and BIOL 2644L  
SPRING 2019

**INSTRUCTOR:** Dr. Lynn Haugen  
**E-MAIL:** lhaugen@wnmu.edu

**OFFICE:** Harlan Hall 143 (575.538.6202)  
**OFFICE HOURS:** TWTH 2:30-4:30PM

**REQUIRED LECTURE TEXT.** *Biology*, 11<sup>th</sup> ed. (ISBN 978-1-259-18813-8) by Mason, KA, JB Losos, and SR Singer. McGraw-Hill, Boston, MA, 2017. Chapters from the text that are covered in this course are listed below. Note that the textbook has an extensive glossary and index. You should use these to look up definitions (both in the glossary and in the text) and to find more in-depth information about concepts covered in class. Copies of the textbook are on reserve in WNMU library.

**COURSE DESCRIPTION.** Animal Form, Function, and Diversity (BIOL 2644 and BIOL 2644L) along with Plant Form, Function, and Diversity (BIOL 2642 and BIOL 2642L) and Cellular and Molecular Biology (BIOL 2110 and 2110L) constitute the freshman biology courses for majors in biology, botany, zoology, and wildlife sciences. Animal Form, Function, and Diversity introduces the scientific process, the properties of life, biological macromolecules, evolutionary processes, systematics and phylogenetics, ecology, and a survey of the major animal phyla. Upon completion of this course students will have an understanding of basic biological concepts that apply to all organisms, and an understanding of the diversity and function of animals, and the processes and mechanisms that account for that diversity. The laboratory portion of the course (BIOL 2644L), which is to be taken concurrently, will specifically introduce students to early embryonic development, animal tissues, and structures and functions of organ systems. Students will learn the major animal phyla, with an emphasis on hands-on exploration and laboratory activities.

**STUDENT LEARNING OUTCOMES.**

1. Describe and apply the scientific method to generate testable hypotheses in evolution and ecology.
2. Understand basic chemistry and the biological macromolecules.
3. Identify and describe the basic principles of evolution and the processes of speciation.
4. Describe how the hierarchical classification scheme is used to categorize organisms and be able to recognize and correctly write scientific names and taxonomy.
5. Understand phylogenetics and describe how DNA research has modernized biosystematics.
6. Compare and contrast the general characteristics of each of the living domains, kingdoms, and animal phyla.
7. Understand early embryonic development of animals.
8. Relate the structure of organisms (tissues, organs, organ systems) to the way they function.
9. Explain how the life histories of organisms are adapted for different environments.
10. Describe the ecological roles played by organisms.
11. Compare basic ecological principles at the population and community levels of organization.
12. Describe and compare energy relationships and the cycling of materials in ecosystems.

**SCHEDULE OF TOPICS AND EXAM DATES:**

<b>Date week of...</b>	<b>Lecture Topics</b>	<b>Textbook Chapters</b>
	<b>Life on Earth</b>	
14 Jan	Introduction to Life on Earth	1
21 Jan	Science as a Process	1
28 Jan	Biochemistry	2
4 Feb	Biological Molecules	3
11 Feb	DNA and DNA Replication	3
	<b>Exam One – 15 February</b>	
	<b>Evolution and Phylogenetics</b>	
18 Feb	Evolutionary Processes	20, 21
25 Feb	Speciation	22
4 Mar	Systematics and Phylogenetics	23
	<b>Exam Two – 8 March</b>	
	<b>Animal Diversity</b>	
18 Mar	Origin and Diversity of Life	26
25 Mar	Animal Diversity	33
1 Apr	Protostomes	34
8 Apr	Deuterostomes	35
	<b>Exam Three – 12 April</b>	
	<b>Ecology</b>	
15 Apr	Behavioral Ecology	54
22 Apr	Population and Community Ecology	55, 56
29 Apr	Dynamics of Ecosystems	57
	<b>Final Exam – 8 May at 7:30-9:30am</b>	

**IMPORTANT DATES.**

Friday, 18 January – last day to drop  
 Monday, 21 January – campus closed  
 Friday, 5 April – last day to withdraw  
 Friday, 19 April – campus closed

## EVALUATIONS.

**Lecture Quizzes.** You will be given *at least 22* quizzes. Each quiz will be worth 5 points for a total of 100 points (the lowest quiz scores will be dropped). These quizzes (and these quizzes only) are open note.

**Lecture Exams.** There will be three exams (100 points each) and a final exam (200 points). Each of the first three exams will consist of multiple choice and true/false questions worth two points each and several short answer/matching/fill in the blank questions. An overwhelming majority of material on the tests will come from lecture. **The final exam will be cumulative** and will consist of multiple choice and true/false questions.

**Lab Participation.** The lab portion of the course will introduce students to the major animal phyla, with an emphasis on hands-on exploration and lab activities. All of the points for lab will be from weekly quizzes, two sets of drawings, a mid-term practical, and a final practical. The final practical will be comprehensive but will emphasize the second half of the course. You will be able to drop your two lowest quiz scores. Quizzes will be given at the beginning of class and will be based on the previous week's lab.

## Lab Schedule

Date (week of...)	Topic
14 Jan	Lab Introduction
21 Jan	Systematics / Protista
28 Jan	Porifera / Cnidaria
4 Feb	Platyhelminthes / Nematoda
11 Feb	Annelida
18 Feb	Mollusca
25 Feb	Review
4 Mar	MIDTERM PRACTICAL
11 Mar	Spring Break
18 Mar	Arthropoda
25 Mar	Echinodermata
1 Apr	Chordata
8 Apr	Animal Tissues
15 Apr	Developmental Biology
22 Apr	Review
29 Apr	FINAL PRACTICAL



**GRADING.** Your grade, at the end of the semester, will be calculated such that 2/3 of your overall grade will be determined by the lecture and 1/3 by points earned in lab. There will be **no** extra credit available at the end of the semester, so *please* don't ask.

Point Distribution		Grade Distribution	
20 lecture quizzes (5 points each)	100	<b>A</b>	89.5% and above
3 exams (100 points each)	300	<b>B</b>	79.5% - 89.4%
final exam	200	<b>C</b>	69.5% - 79.4%
lab points	300	<b>D</b>	59.5% - 69.4%
<b>TOTAL</b>	<b>900</b>	<b>F</b>	59.4% and below

**ATTENDANCE.** You are expected to attend ALL lecture meetings and ALL labs. Because attendance is critical for your success in this course, you will be withdrawn from the course if you miss the equivalent of more than two weeks of the semester (i.e., more than two labs and/or more than four lectures). If you withdraw before the 5 April deadline, you will receive a W on your transcripts. If you are withdrawn from the course after that date, you will receive an F.

**MAKE-UP POLICY.** There will be **no** make-ups!!! This includes lecture and lab quizzes as well as exams (see below for information on how to “make-up” a missed exam). If you are late or miss a quiz for *any* reason, you will not be allowed to make it up (that's why I drop the lowest scores).

**IMPROVEMENT POLICY.** If you have not missed any of the first three exams, you can replace your lowest exam grade with your score on the corresponding part of the final. If you miss an exam, your score on the corresponding part of the final will be used to determine the missing grade (this is your opportunity to “make-up” an exam). This is good for one missed exam only! If you miss the first two exams, you will need to withdraw from the course or receive an F.

**ACADEMIC INTEGRITY.** *Academic misconduct of any kind will not be tolerated.* Violations of academic integrity include “any behavior that misrepresents or falsifies a student's knowledge, skills or ability with the goal of unjustified or illegitimate evaluation or gain” (WNMU Faculty Handbook). Suspected involvement in cheating (“using or attempting to use unauthorized materials...and unauthorized collaboration with others, copying the work of another or any action that presents the work of others to misrepresent the student's knowledge” [WNMU Faculty Handbook]) or plagiarism (“the intentional or unintentional representation of another's work as one's own without proper acknowledgement of the original author or creator of the work” [WNMU Faculty Handbook]) will be reported to the appropriate authority immediately and may result in penalties ranging from a zero on the assignment or quiz to expulsion from the college. It is your responsibility as the student to familiarize yourself with the specifics of what constitutes academic misconduct. Additional precaution: you may not leave the room during an exam - you may leave only *after* you have turned in the exam.

**DISABILITY SERVICES AT WESTERN NEW MEXICO UNIVERSITY.** Services for students with disabilities are provided through the Student Health Center's Disability Support Services Office located in the Juan Chacon Building, Room 221. Some examples of the assistance provided are: audio materials for the blind or dyslexic, note takers, readers, campus guides, audio recorders, and a quiet testing area. In order to qualify for these services, documentation must be provided by certified health care professionals. Disability Support Services forms are available in the First Year Experi-

ence Office located in the Juan Chacon Building and in the Student Health Services Office in Muir Heights 111. The Disability Support Services Office serves as Western New Mexico University's liaison for students with disabilities. The Disability Support Services Office can be contacted by phone at (575) 538-6400 or e-mail at [dss@wnmu.edu](mailto:dss@wnmu.edu). If you have a disability that may prevent you from fully demonstrating your abilities in this course, you should contact disability support services as soon as possible to discuss accommodations necessary to ensure full participation and to facilitate your educational opportunities.

**WNMU COMMUNICATION POLICY.** WNMU's communication policy requires that all official communication be sent via Mustang Express. Although most information pertaining to this course will be posted on Canvas, all emails related to your enrollment at WNMU will be sent to your [wnmu.edu](mailto:wnmu.edu) email address. It is very important that you access your Mustang Express e-mail periodically to check for correspondence from the University. If I need to reach you, I will also use your WNMU address. If you receive most of your email at a different address you can forward your messages from Mustang Express to your other address. For directions on how to forward mail, go to <http://www.wnmu.edu/campusdocs/direction%20for%20forwarding%20email.htm> (although I don't recommend that you forward your wnmu mail to another account because forwarded messages often get lost in cyberspace).

**INCLEMENT WEATHER.** In the event that campus is closed during our scheduled class time, I will send an email through Canvas with updates and announcements specific to this class.

**COPYRIGHT ©.** The materials found in this course are only for the use of students currently enrolled in this course for purposes associated with this course and may not be retained by students in any electronic form or further disseminated or distributed.

**Clovis Community College**  
**GENERAL CHEMISTRY I**  
**CHEM 1215C**

**INSTRUCTOR:** Dr. Lilly Robino  
**PHASE OFFICE:** Phase I  
**PHASE OFFICE PHONE:** 575-769-4911  
**EMAIL:** Please use the message system in Canvas  
**ALTERNATE EMAIL:** Please use the alternate email (lilly.robino@clovis.edu) for emergencies only

**TEXT:** Chemistry, 13<sup>th</sup> edition by Raymond Chang and Kenneth Goldsby, Connect Version. In this course, we will be using a digital version of the textbook (via McGraw Hill Connect). You are required to purchase access to Connect in this course. You can purchase Connect access via the CCC bookstore (**Connect 1-semester access: ISBN 9781260161847**). If you would like a hard copy of the textbook, you may purchase that separately (though it is not required) (Connect Loose Leaf (LL) with 1-semester access: ISBN 9781260264845).

### **MATERIALS REQUIRED**

**Lab Supplies:** This course consists of several at-home labs that can be completed with items commonly found at home (or can be easily purchased). A full list of the necessary lab supplies can be found in the Canvas classroom. Additionally, a **Camera** for taking photos of the labs will be required.  
Further information regarding the textbook and lab supplies are provided in the Canvas classroom.

### **INSTRUCTOR AVAILABILITY & CONTACT INFO**

Students should send all communication through our in-class Canvas message system. I normally check class mail several times a day, but please note that CCC's response policy for online faculty states "faculty will check and respond to all mail messages at least four times a week, Sunday through Saturday, with no more than 72 hours between checking the system." In the event of an emergency, and you need a faster response, you may contact me directly at lilly.robino@clovis.edu.

### **COURSE DESCRIPTION**

This course is intended to serve as an introduction to General Chemistry for students enrolled in science, engineering, and certain pre-professional programs. Students will be introduced to several fundamental concepts, including mole, concentration, heat, atomic and molecular structure, periodicity, bonding, physical states, stoichiometry, and reactions. The laboratory component is designed to complement the theory and concepts presented in lecture, and will introduce students to techniques for obtaining and analyzing experimental observations pertaining to chemistry using diverse methods and equipment.

Students must have successfully completed College Algebra (MTH 110) or its equivalent with a "C" or better in the past 5 years. Two years of high school algebra will meet this requirement (with a "C" or better in past 5 years). Students cannot take Chem 151 and Chem 152 concurrently without special permission.

### **COURSE OBJECTIVES**

By the end of this course, students should achieve at least 70% proficiency in the following lecture and laboratory learning outcomes:

#### **Lecture Student Learning Outcomes:**

1. Use dimensional analysis, the SI system of units and appropriate significant figures to solve quantitative calculations in science.
2. Explain the structure of atoms, isotopes and ions in terms of subatomic particles.
3. Understand the differences between physical and chemical changes to matter, and utilize the IUPAC system of nomenclature and knowledge of reaction types to describe chemical changes, predict products and represent the process as a balanced equation.
4. Apply the mole concept to amounts on a macroscopic and a microscopic level and use this to perform stoichiometric calculations including for reactions in solution, gases and thermochemistry.

5. Apply the gas laws and kinetic molecular theory to relate atomic level behavior to macroscopic properties.
6. Describe the energy conversions that occur in chemical reactions and state changes, relating heat of reaction to thermodynamic properties such as enthalpy and internal energy, and apply these principles to measure and calculate energy changes in reaction.
7. Use different bonding models to describe formation of compounds (ionic and covalent), and apply knowledge of electronic structure to determine molecular spatial arrangement and polarity.
8. Analyze how periodic properties (e.g. electronegativity, atomic and ionic radii, ionization energy, electron affinity, metallic character) and reactivity of elements results from electron configurations of atoms.

#### **Laboratory Student Learning Outcomes:**

1. Demonstrate and apply concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value with the correct units, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Prepare solutions with an acceptable accuracy to a known concentration using appropriate glassware.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Demonstrate mastery in experimental techniques, such as pressure measurements, calorimetric measurements, and spectrophotometric measurements
7. Draw conclusions based on data and analyses from laboratory experiments.
8. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
10. Design experimental procedures to study chemical phenomena.

#### **ONLINE COURSE GUIDELINES**

To see the latest guidelines for all online courses, please see the [Online Course Guidelines](#) document located within the Canvas course.

#### **TECHNOLOGY REQUIREMENTS**

Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please [click here](#) to see basic computer specifications for Canvas.

#### **SUBMITTING ASSIGNMENTS**

All assignments, quizzes and exams will be submitted via the online classroom and are due by **11:59 pm Mountain Time** on the date specified in the syllabus. Please make sure to adjust this to your local time zone and that you know what time it is at your house when it is 11:59 pm in Clovis, NM. Additionally I highly suggest that you back-up all of your work to a cloud or thumb drive in case of technical failure or file corruption. Technical problems (including computer failure) are not valid grounds for late submission. In the unlikely event that CCC's website and/or Canvas are out-of-service, students should submit assignments via email to [lilly.robino@clovis.edu](mailto:lilly.robino@clovis.edu) (using proper attachments). However, once systems are restored, students must submit via the assignment folder. **Late items will not be accepted.**

#### **MAKE-UP WORK**

Make up work is not available in this course, but the lowest lab, homework, exam scores will be dropped.

## GRADING POLICY

Course grades will be based on academic performance in labs, homework, discussions, lecture exams, lab quizzes, midterm and final.

## ASSIGNMENTS: PERCENT OF COURSE GRADE

Grades will be based on the following:

- Lab Assignments 20%
- Discussions 10%
- LearnSmart Modules 5%
- Homework Problems 15%
- Lecture Exams 10%
- Lab Project 10%
- Midterm Exam 15%
- Final Exam 15%

## GRADING SCALE

Student final grades are based on overall performance in class

90 - 100%	= A
80 - 89%	= B
70 - 79%	= C
60 - 69%	= D
<60%	= F

Exams will be graded immediately upon their completion and the grade will be displayed in the grade book. The correct answers will be provided after the deadline for the exam has passed. The labs, discussions and homework will be graded within 7 days after the due date. No assignments will be graded until after the due date.

Each student will be allowed to drop their lowest lab assignment, LearnSmart module, homework, and exam score (with the exception of the midterm and final exams). This would include any assignment that was missed and earned a zero. Once dropped, these items will have no effect on your final grade.

## EXTRA CREDIT

There are two extra credit opportunities in the course – the midterm review and the final exam review. Completion of the review assignments will provide extra credit points that will be added to the midterm and final exams, respectively.

## LATE WORK

**Late assignments will not be accepted**, so please do not wait until the last minute to complete the assignments. Because unforeseeable circumstances occur, each student will be allowed to drop their lowest lab, quiz, exam, and homework assignment. This will allow each student to miss one of these assignments without being penalized. **Assignments must be completed before the deadline. If you know in advance that you will be unable to complete an assignment, it should be completed in advance. There are no exceptions to this rule, so don't ask!**

## PROJECT DESCRIPTIONS

**Laboratory Exercises:** A total of 13 laboratory assignments (1 pre-lab exercise, 11 lab exercises and a final lab project) will be assigned throughout the semester. These exercises are designed to give you the hands-on experience available to on-campus students. The majority of the lab assignments can be completed using materials found at home (or which can be easily purchased – a full list of lab supplies is provided in the Canvas classroom). You will also need a camera (digital is preferred) to take pictures of the lab activities. This documentation is required in order to receive credit for lab activities where photos are requested. The complete list of materials and the instructions will be listed under each lab assignment. **Please be sure to read the assignment well in advance, to ensure that you have the proper materials.** Additionally, many of the lab exercises are time consuming, so please do not wait until the last minute to start the labs. The lowest lab score (not including the final lab project) will be dropped from the final grade. The rubric for the lab exercises can be found with each lab assignment.

**Discussions:** A total of 4 discussion questions will be assigned throughout the semester. The discussions consist of two parts: your initial discussion post and your responses to classmates. The rubric for the discussions can be found with each discussion topic.

**LearnSmart Modules:** The Connect platform utilizes interactive LearnSmart study modules when reading the textbook. The study modules include practice questions pertaining to the chapter material that test student understanding of the material. Completion of the study module questions for each chapter is required in this course. The lowest LearnSmart Module score will be dropped from the final grade.

**Homework:** A total of 12 homework problem sets (one per chapter, plus a chemistry review assignment) will be assigned during the course. All of the homework problem sets will be completed via Connect. The lowest problem set score will be dropped from the final grade.

**Exams:** A series of lecture exams will be assigned throughout the course. They are not proctored but are timed. An exam may only be taken once and it must be taken before the scheduled deadline. **Exams are NOT open book/notes - they are intended to be taken in the same way as any normal "on campus" exam in which your only resource is what you know. There will be no make-up exams allowed, so please do not ask.** This policy is discussed in the "Late Assignment" section. **Note: The tracking system will be checked for all students, and any student trying to access previous quizzes, assignments, exams or any other website while logged into any exam will result in a zero for that exam.**

**Midterm and Final Exams:** Each student is also required to take a **proctored** and timed (2 hour) midterm exam during Week 9 and a final exam during Week 16. The midterm and final **cannot** be dropped and must be taken during the scheduled time.

**If you live within 50 miles of Clovis Community College,** you may take the final exam here at CCC in our Testing Center or via ProctorU. If you choose to use the CCC Testing Center, I will turn in your names to the testing center before the exam. Once I submit your name (I will send you a mail message when I do), you will need to contact the testing center to schedule a time to take your exam during the midterm week and during the final exam week. Do not contact me to schedule your exam. If you choose to use ProctorU, please see below.

**If you live more than 50 miles from Clovis Community College,** then you can take your exam with an approved proctor or drive here to take it. If you want to take the final at CCC, please let me know and I will inform the testing center before the exam. If you do not plan to use CCC's testing center, then you will need to arrange to take your final exam with a suitable proctor - this means an official testing center or ProctorU. I know this can be inconvenient (or expensive), but it is a requirement for this course.

- If you choose to use a certified testing center, you and the proctor will need to fill out the approval form and upload it to the "Proctor Approval" assignment. Once I receive the proper proctor information, I will send your proctor information regarding the exam as the date as the draws near.
- If you choose to use ProctorU, you must let me know. You will then need to schedule an appointment with ProctorU (<http://www.proctoru.com/portal/clovis/>) - you do not need to submit a proctor form to me. More information about ProctorU can be found at the above website.

**THE PROCTOR SITE MUST BE APPROVED BY THE DEADLINES INDICATED ON THE SYLLABUS!**

### QUALIFIED STUDENTS WITH DISABILITIES

Clovis Community College offers all students an equal opportunity for education. Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (575-769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that your needs are appropriately met. Additional information can be found at <http://www.clovis.edu/advising/specialservices.aspx>

### TECHNICAL SUPPORT

Canvas/CCC Technical Support (Mon – Fri, 7 am - 7 pm)

- Click on "Submit a Help Desk Ticket" on Pathway
- Email: [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu)
- Phone: 575-769-4969

- Go to: "Click here to learn how to use Canvas" on the login page.

McGraw Hill Connect Support (Mon – Thurs, 24 hrs; Fri, 12 am – 9 pm ET; Sat, 10 am – 8 pm ET; Sun 12 pm – 12 am ET)

- Go to: <http://www.mheducation.com/contact.html#tech-support>
  - Click on "Online Help" under Higher Ed
- Phone: 800-331-5094

### **ACADEMIC DISHONESTY**

Academic dishonesty is an act by a student to use and/or represent the work of other individuals as that of their own production and/or creation. Academic dishonesty is unacceptable within the campus and in this course. Students committing acts of academic dishonesty shall be penalized by a failing grade on the assignment and/or the entire course, depending on the severity of the dishonest act. Please consult the college catalog for more information on the institutional policy on academic dishonesty.

### **NETIQUETTE**

Please see the "Online Course Guidelines" for the current policy. **Students may be administratively withdrawn for netiquette violations.**

**All assignments are due at 11:59 pm Mountain Time**

<b>Date &amp; Module</b>	<b>Assignments</b>
Module 1	Purchase Connect access and lab supplies Post an introduction Discussion 1 initial post Prep Gen Chem (review assignment) Pre-lab Exercise – How to Write a Methods Section
Module 2	Chapter 1 – Chemistry: The Study of Change LearnSmart Module Chapter 1 Homework Discussion 1 responses Lab Exercise 1 – The Scientific Method
Module 3	Chapter 2 – Atoms, Molecules, and Ions LearnSmart Module Chapter 2 Homework Lab Exercise 2 – Naming Compounds
Module 4	Chapter 3 – Mass Relationships in Chemical Reactions LearnSmart Module Chapter 3 Homework Lab Exercise 3 – Stoichiometry
Module 5	Chapter 4 – Reactions in Aqueous Solutions LearnSmart Module Chapter 4 Homework Discussion 2 initial post Lab Exercise 4 – Redox Lecture Exam I (Chapters 1-3)
Module 6	Chapter 6 (sections 6.1-6.4) – Thermochemistry LearnSmart Module Part 1 Chapter 6 Homework A Discussion 2 responses Lab Exercise 5 – Intro to Thermodynamics <b>***Proctor forms for the midterm due to the instructor***</b>
Module 7	Chapter 6 (sections 6.5-6.7) – Thermochemistry LearnSmart Module Part 2 Chapter 6 Homework B Lab Exercise 6 – Calorimetry
Module 8	Lecture Exam II (Chapters 4 & 6) Midterm Review (extra credit)
Module 9	<b>Midterm Exam (Chapters 1-4, &amp; 6) – Proctor Required</b>
Module 10	Chapter 5 – Gases LearnSmart Module Chapter 5 Homework Problems Discussion 4 initial post Lab Exercise 7 – Gas Laws
Module 11	Chapter 7 – Quantum Theory LearnSmart Module Chapter 7 Homework Discussion 3 initial post Lab Exercise 8 – Flame Tests & Spectroscopy



Module 12	Chapter 8 – Periodic Relationships Among the Elements LearnSmart Module Chapter 8 Homework Discussion 3 responses Lab Exercise 8 – The Periodic Table
Module 13	Chapter 9 (sections 9.1-9.6) – Chemical Bonding I LearnSmart Module Part 1 Chapter 9 Homework A Lab Exercise 9 – Ionic vs. Covalent Compounds Lecture Exam III (Chapters 5 & 7-8) <b>***Proctor forms for the final due to the instructor***</b>
Module 14	Chapter 9 (sections 9.7-9.10) – Chemical Bonding I Learnsmart Module Part 2 Chapter 10 (sections 10.1-10.2) – Chemical Bonding II LearnSmart Module Chapters 9 & 10 Homework B Lab Exercise 10 – Lewis Structures & Molecular Geometry
Module 15	Final Lab Project Discussion 4 responses Lecture Exam IV (Chapters 9-10) Final Exam Review (extra credit)
Module 16	<b>Final Exam (Chapters 5 &amp; 7-10) – Proctor Required</b>

**CLOVIS COMMUNITY COLLEGE**  
**United States History II-HISTORY 1120**  
**Fall 2019**

**Instructor:**

**Office:**

**E-mail:**

**Office Hours:**

**Required Text:**

Kennedy, David M. and Cohen, Lizabeth. **The American Pageant**. Seventeenth Edition, 2020. Cengage Learning, Volume II.

**Course Website:**

<http://www.clovis.edu/faculty/michaelpowers.aspx> select your class for syllabus/class schedule, lecture/chapter outlines, test essays, map identification/blank maps for tests, and other study aids.

**Course Description:**

The primary objective of this course is to serve as an introduction to the history of the United States from reconstruction to the present. The elements of this course are designed to inform students on the major events and trends that are essential in the understanding of the development of the United States within the context of world societies.

**Student Learning Outcomes:**

*Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries for the history of the United States from reconstruction to the present.*

*Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.*

*Students will summarize and appraise different historical interpretations and evidence in order to construct past events.*

*Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluating credibility, perspective, and relevance.*

*Students will create well-supported historical arguments and narrative that demonstrate an awareness of audience.*

*Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.*

**Course Goals:**

*To understand the individual role of economy, society, government, religion, and culture in American history*

*To trace the role and effects of Reconstruction, the American West, and industrialization on the development of the United States*

*To discuss how imperialism, world war, world economic depression contributed to a modern U.S. Government and society*

*To recognize the origins of World War II and how its consequences affected the domestic and foreign policies of the United States and the world*

*To follow the path of the Cold War, the civil rights movement, and the growth of prosperity and affluence in the U.S., as well as the upheavals of the 1960s and their aftermath*

**Attendance Requirements:**

Attendance is required at all sessions in each course. When circumstances make attendance impossible, students should notify the instructor of their absence. Students are responsible for making sure they are caught up with the class lectures and assignments, so they are able to attend the next class session prepared.

**An excused absence will occur when the student contacts the instructor before the start of that class or a medical, family, or work emergency occurs. An unexcused absence will occur when the student does contact the instructor of his/her absence before the start of that class. More than four unexcused absences by a student during the semester will drop the student's final grade one letter grade or 10 points. A final grade of 95-A will become an 85-B. An 85-B will become a 75-C.**

**Withdraw:**

If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. **Instructors do not withdraw students.** Dual credit students must contact their high school counselor.

**CCC E-mail:**

The instructor will not communicate with students via CCC e-mail. Students may use their individual e-mail account to contact the instructor at [michael.powers@clovis.edu](mailto:michael.powers@clovis.edu)

**Canvas Shell:**

Since all courses have a Canvas shell and all faculty are required at a minimum to maintain a grade book in Canvas, indicate how the Canvas shell will be used in your course. This can include supplemental information that will be provided for students, information on submitting assignments, HelpDesk information, etc.

**Technology Requirements:**

Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please [click here](#) to see basic computer specifications for Canvas. Please keep in mind that computers are available for student use in the library.

**Starfish:**

Clovis Community College uses **Starfish Early Alert** as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit "Starfish for Students" at <http://www.clovis.edu/students/starfish.aspx>. If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

**Grading Policy:**

The final grade for this class will come from **three** hourly exams that include sixty multiple choice questions, three historical maps, and two essay questions (**110 pts. possible**). Each hourly test is worth one hundred points. The final exam will be comprehensive and objective and will be composed of one hundred multiple choice questions. The final exam is worth one hundred points.

Make up exams will **only** be given due to normal circumstances of sickness, job related problems, and unforeseen emergencies, or personal and family responsibilities. **No** make up exam will be given without prior notice of the student's absence during an hourly exam and has to be taken prior to the next class meeting. will be given without prior notice of the student's absence during an hourly exam. Exams cannot be made up once the instructor has returned the graded exam to students. Students are encouraged to take any hourly or final exam early if he or she cannot be present in class on the test date.

Extra credit will compose of video presentations that not only will serve as extra credit assignments, but will also be useful to students in understanding the material contained in each hourly exam. There will be **three** extra credit videos shown during the length of the class. Only a maximum of **fifteen-twenty** points may be accumulated by each individual student.

One Final Exam	100 points
Three Hourly Exams	300 points
Total points	400 points

#### **Final Grading Scale**

A	360-400
B	320-359
C	280-319
D	240-279
F	239-

#### **Qualified Students With Disabilities:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

#### **Copyright:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

#### **Emergency Alert:**

In case of campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave)

#### **Academic Dishonesty:**

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the college catalog. Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor's evaluation of the severity of the dishonest act. Consult the [college catalog](#) for more information on the institutional policy on academic integrity.

**Technical Support:**

CCC Help Desk support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4747. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom. You may also find answers to common questions / problems on [Canvas FAQs](#).

**Help Desk Hours:**

Monday-Thursday 7 a.m. to 7 p.m.

Friday 7 a.m. to 4:30 p.m.

Interim, Monday-Friday 7 a.m. to 4:30 p.m.

**Computers on Campus:**

Computers for student use are available on campus in the [Center for Student Success](#) (room 171). Please call 575.769.4095 for more information. The Center is open Monday-Thursday from 8 a.m. to 8 p.m. and 8 a.m. to 4:30 p.m. on Fridays. It is closed weekends and holidays.

The employees in the Center are there to assist students and faculty with computer functions such as power-up, keyboard operations, printer operations, and software problem determination. They are not expected, however, to instruct students or be a substitute for a faculty member. Any help from assistants should be considered a suggested solution and may be different from the solution expected by the instructor. When in doubt, CONTACT YOUR INSTRUCTOR

**General information:** Consult the current semester calendar for information concerning course withdrawal deadlines.

## Rubric for Critical Thinking in Final Crime Scene Report for ANTH/BIOL/CHEM 125

Critical Thinking Component Skill	Emerging	Developing	Proficient
<b>Problem Setting:</b> Delineate a problem or question.	Student states situation at the scene as it was discovered by them at the beginning of their investigation.	Student states situation at the scene as it was discovered by them at the beginning of their investigation, providing more detailed outline of the major aspects of the scene than in previous category.	Student clearly states situation at the scene as it was discovered by them at the beginning of their investigation. Their description of the major aspects of the crime scene is more thorough and clearer than in previous category.
<b>Evidence Acquisition:</b> Identify and gather the information/data necessary to address the problem or question.	Students gather at least five types of evidence from the mock crime scene.	Students gather at least five types of evidence from the mock crime scene. This evidence is gathered correctly according to the protocols learned in class.	Students gather more than five types of evidence from the mock crime scene. This evidence is gathered correctly according to the protocols learned in class. Student reports reflect on how the evidence was collected and any impact to the crime scene their collection activity may have had.
<b>Evidence Evaluation:</b> Evaluate evidence/data for credibility (e.g. bias, reliability, validity), probable truth, and relevance to a situation.	Students are able to describe appropriate methods to evaluate crime scene evidence.	Students are sometimes able to evaluate credibility and relevance of the types of evidence collected from the crime scene in addition to demonstrating some awareness of the evaluation process, including personal assumptions.	Students are able to evaluate credibility and relevance of the types of evidence collected from the crime scene in addition to demonstrating an awareness of the evaluation process, including personal assumptions.
<b>Reasoning/Conclusion:</b> Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation.	Student provides an explanation of the alleged crime that resulted in the crime scene they studied. Their explanation ties in some of the evidence from the scene.	Student provides a logical explanation of the alleged crime that resulted in the crime scene they studied. Student can sometimes differentiate evidence that supports and refutes their proposed explanation. Student ties all of the evidence they collected into their explanation of the crime scene.	Student offers several plausible explanations of the alleged crime and can differentiate weak and strong explanations to reach the most likely explanation based on the evidence.

## Rubric for Quantitative Reasoning in ANTH/BIOL/CHEM 125

Component Skill	Emerging	Developing	Proficient
<b>Communication/Representation of Quantitative Information:</b> Express quantitative information symbolically, graphically, and in written or oral language.	In Final Report, student provides a diagram of the crime scene that includes most major components of the scene and necessary explanatory elements (such as scale, north arrow, etc.).	Student provides a diagram of the crime scene that includes the major components of the scene and all necessary explanatory elements (such as scale, north arrow, etc.). Diagram is referred to in report to help explain reasoning behind their explanation of the crime.	Student provides an accurate, neat, and thorough diagram of the crime scene that includes the major components of the scene and all necessary explanatory elements (such as scale, north arrow, etc.). Diagram is accurately referred to in report to help explain reasoning behind their explanation of the crime.
<b>Analysis of Quantitative Arguments:</b> Interpret, analyze and critique information or a line of reasoning presented by others.	Students summarize quantitative arguments presented by others in final presentations.	Student differentiates and describes the parts of a quantitative argument presented by their fellow students in their final report presentations; they compare the conclusions of all students who analyzed the same crime scene.	Student differentiates and describes the parts of an argument presented by their fellow students in their final report presentations; they compare the conclusions of all students who analyzed the same crime scene. Student is able to successfully evaluate in writing whether another student's interpretation of the crime scene is valid, invalid, or questionable.
<b>Application of Quantitative Models:</b> Apply appropriate quantitative models to real-world or other contextual problems.	In Ballistics Lab, students identify, describe, and measure bullet holes.	In Ballistics Lab, students identify, describe, and measure bullet holes. They understand and explain in written lab the process needed to collect angle of entry, estimate shooters location, and height of weapon.	In Ballistics Lab, students identify, describe, and measure bullet holes. They understand and explain in written lab the process needed to collect angle of entry, estimate shooters location, and height of weapon. The student accurately calculates these factors (within 10 degrees for angle, within 3 feet for location, and within 1 foot for height) and uses this data to correctly determine shooter's location.



### Rubric for Personal and Social Responsibility in ANTH/BIOL/CHEM 125

Component Skill	Emerging	Developing	Proficient
Ethical reasoning	Students recognize a variety of ethical theories regarding forensic science and place them in the context of crime scene and laboratory analyses.	Students can recognize and describe a variety of ethical theories regarding forensic science and place them in the context of crime scene and laboratory analyses.	Students can recognize, describe, and compare a variety of ethical theories regarding forensic science and place them in the context of crime scene and laboratory analyses. Students can propose an ethical solution to a hypothetical situation based on one or more of those perspectives.
Collaboration skills, teamwork and value systems	As a group member, students demonstrate shared ethical obligations and intercultural sensitivity.	Students demonstrate personal and mutual accountability and make use of individual strengths in meeting group objectives in their final crime scene analysis.	Students effectively complete a group crime scene analysis, reflect on the impact and effectiveness of teamwork, and, based on that reflection, describe ways to improve future collaborative work.

**Clovis Community  
College World History II  
HIST. 1140  
Fall 2019**

Instructor:  
Office:  
Office Hours:  
Phone:  
E-mail:

**Email and Availability:**

You are issued student email accounts and linked Canvas message accounts, and we will use these accounts as our primary form of communication outside the classroom. I suggest you to contact me via e-mail or Canvas message if you have a question or concern, as I check my email frequently, and check yours often as I will use it to make announcements concerning weathers delays, etc. I will reply to all email inquiries within 24 hours during weekdays, or 48 hours during weekends. You may also contact me via phone or come by during office hours.

Course Start Date:  
Course End Date:

**Online Access:**

[www.canvas.clovis.edu](http://www.canvas.clovis.edu)

**Course Description:**

The primary objective of this course is to serve as an introduction to global history from 1450 to the modern era. The elements of this course are designed to inform students on the major events and trends that are essential in the understanding of the development of world societies.

**Student Learning Outcomes:**

- 1) Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries of global history from ancient times to the present.
- 2) Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.
- 3) Students will summarize and appraise different historical interpretations and evidence in order to construct past events.
- 4) Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluate credibility, perspective, and relevance.

- 5) Students will create well-supported historical arguments and narratives that demonstrate an awareness of audience.
- 6) Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.

**Required Textbook:**

Upshur, Terry, et al. *World History: Before 1600: The Development of Early Civilization*, Volume I, 5th Ed., Cengage Advantage Books, 2012.

ISBN-10: 1-111-34516-3

ISBN-13: 978-1-111-34516-7

You may purchase the textbook from the CCC Bookstore or online. If you are a distance learner, I recommend you call the CCC bookstore at 575-769-4050 for UPS delivery (to insure quick delivery and make sure you get the right edition). But do so quickly as you have assigned readings the second week!

Use the above ISBN numbers to order the right book.

**Canvas:**

Clovis Community College's online classes offer anytime, anyplace, distance learning over the Internet. Our accredited online classes offer you the flexibility and convenience to complete many of your degree requirements from any computer that has Internet access. Students may also use the college's computer lab for their online coursework. The entirety of this class will be conducted through the Canvas course provided.

Orientation: A Canvas orientation course is available to familiarize yourself with our online learning management system at <https://cloviscc.instructure.com/courses/276879>

**Technical Skills Needed:**

Students need access to a laptop or pc computer with internet, and students must be able to use email with attachments, attach files, create a discussion thread, and respond to the threads of others. These are important aspects of the class; do not hesitate to ask if you need assistance with any of the tasks mentioned. Student assessment will be accomplished via instructor evaluation of a quizzes, discussion board conversations, and examinations as follows:

**Submitting Assignments:**

All assignments must be submitted in the online classroom. Please pay close attention to the due dates and note that all online course messages and submissions are automatically date and time stamped using MST, Clovis time. Make sure you know what time it is when you submit your assignments as there are specific due dates and times that are spread out over the week so you are not overwhelmed.

## **Course Requirements and Grading Policy:**

There will be two proctored exams in this class – a midterm and a final exam. In addition, there will be one quiz and written “Discussion Board” assignment due each week based upon the readings, videos, and PowerPoint Lectures. You will find all weekly assignments and study materials such as PowerPoint lectures and videos in “Modules.” You will also be reminded of the week’s assignments in the “Announcements” section, so check it often.

Grades will be broken-down as follows:

Exam 1	= 125 points
Exam 2	= 125 points
Quizzes	= 420 points (30 points each)
Discussion Board	= 280 points (20 points each)

Final Grades will be calculated on the following scale:

A = 950-855 points
B = 854-760 points
C = 759-665 points
D = 664-570 points
F = Below 570 points

## **Reading/PowerPoint Lectures/Videos:**

In addition to the weekly textbook readings, additional PowerPoint lectures and videos will be assigned to supplement reading. Information from these additional sources will appear on tests and should appear in discussions.

## **Syllabus Quiz (30 pts.):**

During Week 1, each student will print this syllabus and familiarize herself/himself with its contents. The student will then take a brief quiz about its contents. The quiz is available during the first week, and for one additional week, at the “Week 1: In the Beginning” link available within “Modules” in Canvas.

## **Weekly Quizzes (30 pts. each):**

Quiz material is drawn from the textbook and from any supplemental content posted by the instructor. Quizzes are not cumulative and will be specific to anything covered in the lesson materials for a given week. Each quiz shall consist of two kinds of questions: multiple-choice questions or true/false statement prompts. The quizzes will be available at 12:00 p.m. on the Monday of the week of the quiz and will remain open until the due date Sunday, and students may take the quiz anytime during that time.

## **Weekly Discussion Board (20 pts. each):**

Students will participate in weekly discussions, and students will be required to have one original post on the instructor-selected topic and respond to at least one fellow students' original post each week. See Discussion Rules and Rubric on Canvas for specific details regarding expectations for the Discussion Board.

### **Proctored Midterm and Final Exams (125 pts. each):**

There will be a midterm and a final exam, counting for approximately 25% of your grade. The exams will be cumulative for each half of the semester. Thus, each will cover about four chapters of readings, quizzes, lectures, and written discussion board assignments. The format will be multiple choice and one essay.

These exams will be taken during the scheduled midterm and finals weeks and will be proctored. This means the student will have to make arrangements to do one of the following: take the exam at the CCC Testing Center, take the exam at a Testing Center of a local college outside of Clovis, or the student can pay a fee to use the online service Proctor U. Students are personally responsible to make arrangements to attend the midterm and final exam in one of the listed options, and the arrangements must be made at least one week beforehand.

Midterm Exam: Upshur Chapters 1-4 in the textbook, videos, quizzes, PowerPoint lectures, and Discussion Board questions.

Final Exam: Upshur Chapters 5-8 in the textbook, videos, quizzes, PowerPoint lectures, and Discussion Board questions.

### **Attendance Requirements and Participation:**

Attendance is required for all sessions of this course. When circumstances make attendance impossible, students should notify the instructor of their absence as soon as possible. Students are responsible for making sure they are caught up with the class lectures and assignments, so they are able to attend the next class session prepared.

Attendance will be recorded weekly, and this means that you must participate in the weekly assignments or you will be counted absent – even if you logged on, but did not participate or complete any assigned work. If you miss three weeks without participating, you will be in grave jeopardy of failing. If you have an illness or some other mitigating circumstance, you will need to contact me immediately to discuss your situation and make arrangements.

### **Remediation and Make-up:**

Student Success Programs: Clovis Community College offers students several free services staffed by specialists and tutors. These include: The Center for Student Success (room 171 where computers for student use are also available), the Writing Center (room 172), and many other resource for student success. Students may walk in, schedule appointments, or attend mini sessions.

Late assignments or quizzes will be accepted only on approval of the instructor. Computer failure and trips (personal or school related) are not an acceptable excuse for failure to turn in an assignment. Students have access to computers at CCC and any public library. All hotels provide Wi-Fi and/or have a business center that provides computers with internet access for those who do not have an electronic device with them. It is rare that internet access is not available so please do not try to use this as an excuse. If the assignment is late, it will accrue a late penalty of 50 percent the day after the assignment is due. Everyone is required to participate in discussions in a timely manner each week. It is not possible to complete this class with a passing grade without such participation. The beauty of an online class is that students can complete the assignments on their own time; because of this, the late assignment policy will be strictly enforced. This class is not a self-paced class and assignments have due dates. Trips are not excuses to ask for an extension; however, there are some situations that may call for an extension, but I will determine those.

### **Discussion Rules:**

Students must uphold a mature level of interaction with each other and with the instructor. Please respect other students when they respond to the learning group discussion. Part of this learning process includes the acquisition or honing of life skills associated with online collaboration as a group including a civil discussion of differences of ideas. Grades of students who fail to display appropriate behavior, decorum, respect, or kindness to each other will be adjusted accordingly (this includes responding to questions posed by other students). Student's original posts, as well as responses, must be relevant to the lead question for each discussion, failure to adhere to this will reflect negatively on the student's grade. Students must respond, on a separate day, with intelligence to other students' posts. Responses such as "Good job," "I really liked how you brought out..." "It is amazing how they were..." etc. are not acceptable response posts (unless they are accompanied with more intelligent information), nor will responses that are simply questions to the author of the original post (unless accompanied by more intelligent information). These types of responses will not be considered as a response post and a zero will be given for those responses.

All original posts are due Thursday and at least one response is to be made on a separate day to another student's post, which are due Saturday of the week assigned. It is a general rule that the more a student participates in the discussion board the more the student learns; so, try to participate as much as possible. Be sure to check your Canvas regularly, checking in once a week will not be beneficial to students. It is expected that students respond to questions of their fellow students and the instructor. (See Group Discussion Rules and Rubric for more details.)

### **Starfish Early Alerts:**

Clovis Community College uses Starfish Early Alert as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need,

your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at <http://www.clovis.edu/students/starfish.aspx> . If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

### **Withdrawal:**

If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. Instructors do not withdraw students. Dual credit students must contact their high school counselor.

### **Disputed grades:**

Students who disagree with a grade should consult the instructor.

### **Academic Dishonesty and Standards:**

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the college catalog. Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor’s evaluation of the severity of the dishonest act. Consult the college catalog for more information on the institutional policy on academic integrity.

### **Qualified Students with Disabilities:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

### **Copyright:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post

information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

### **Technical Support:**

CCC Help Desk support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4747. Be sure to visit the Canvas Student Orientation site if you need help navigating our online classroom. You may also find answers to common questions / problems on Canvas FAQs.

### **Help Desk Hours:**

Monday-Thursday 7 a.m. to 7 p.m.

Friday 7 a.m. to 4:30 p.m.

Interim, Monday-Friday 7 a.m. to 4:30 p.m.

### **Computers on Campus:**

Computers for student use are available on campus in the Center for Student Success (room 171). Please call 575.769.4095 for more information. The Center is open Monday-Thursday from 8 a.m. to 8 p.m. and 8 a.m. to 4:30 p.m. on Fridays. It is closed weekends and holidays.

The employees in the Center are there to assist students and faculty with computer functions such as power-up, keyboard operations, printer operations, and software problem determination. They are not expected, however, to instruct students or be a substitute for a faculty member. Any help from assistants should be considered a suggested solution and may be different from the solution expected by the instructor. When in doubt, contact your instructor.



**Clovis Community  
College Survey of New  
Mexico History/ HIST  
2110  
Fall 2019**

Instructor:  
Office:  
Office Hours:  
Phone:  
E-mail:

**Availability:**

You are issued student email accounts and linked Canvas message accounts, and we will use these accounts as our primary form of communication outside the classroom. I suggest you to contact me via e-mail or Canvas message if you have a question or concern, as I check my email frequently, and check yours often as I will use it to make announcements concerning weathers delays, etc. I will reply to all email inquiries within 24 hours during weekdays, or 48 hours during weekends. You may also contact me via phone or come by during office hours.

Course Start Date:  
Course End Date:

**Online Access:**

[www.canvas.clovis.edu](http://www.canvas.clovis.edu)

**Course Description:**

The primary objective of this course is to serve as an introduction to the history of New Mexico from the pre-Columbian times to the present day. The elements of this course are designed to inform students on the major events and trends that are essential in the understanding of the development of New Mexico within the context of the Americas.

**Student Learning Outcomes:**

- 1) Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries of New Mexico history from pre-Columbian times to the present day.
- 2) Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.

- 3) Students will summarize and appraise different historical interpretations and evidence in order to construct past events.
- 4) Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluate credibility, perspective, and relevance.
- 5) Students will create well-supported historical arguments and narratives that demonstrate an awareness of audience.
- 6) Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.

### **Required Textbooks:**

Calvin A. Roberts and Susan A. Roberts. *New Mexico*. Rev. ed. Albuquerque: University of New Mexico Press, 2006. ISBN 10: 0-8263-4003-2

Richard W. Etulain, ed. *New Mexican Lives: Profiles and Historical Stories*. Albuquerque: University of New Mexico Press, 2002. ISBN 10: 0-8263-2433-9

(Note: If you are a high school dual enrollment student, you will contact your school guidance counselor to procure your textbooks. All other students will need to make arrangements to purchase the textbooks from the CCC Bookstore, off-campus bookstores, or online)

### **Canvas and Online Course Guidelines:**

Clovis Community College's online classes offer anytime, anyplace, distance learning over the Internet.

Our accredited online classes offer you the flexibility and convenience to complete many of your degree requirements from any computer that has Internet access. Students may also use the college's computer lab for their online coursework.

To see the latest guidelines for all online courses, please see the “[Online Course Guidelines](#)” document located within your Canvas course in the navigation menu.

### **Tools and Technical Skills Needed:**

Students need access to a laptop or pc computer with internet, and must be able to use email with attachments, attach files, create a discussion thread, and respond to the threads of others. These are important aspects of the class; do not hesitate to ask if you need assistance with any of the tasks mentioned.

### **Submitting Assignments:**

All assignments must be submitted in the online classroom. Please pay close attention to the due dates and note that all online course messages and submissions are automatically date and time stamped using MST, Clovis time. Make sure you know what time it is when you submit your

assignments as there are specific due dates and times that are spread out over the week so you are not overwhelmed.

### **Course Requirements and Grading Policy:**

There will be two proctored exams in this class – a midterm and a final exam. In addition, there will be one quiz and written “Discussion Board” assignment due each week based upon the readings, videos, and PowerPoint Lectures. You will find all weekly assignments and study materials such as PowerPoint lectures and videos in “Modules.” You will also be reminded of the week’s assignments in the “Announcements” section, so check it often.

Grades will be broken-down as follows:

Exam 1 = 125 points (13%)

Exam 2 = 125 points (13%)

Quizzes = 420 points (30 points each – 44% total)

Discussion Board = 280 points (20 points each – 30% total)

Final Grades will be calculated on the following scale:

A = 950-855 points

B = 854-760 points

C = 759-665 points

D = 664-570 points

F = Below 570 points

### **Reading/PowerPoint Lectures/Videos:**

In addition to the weekly textbook readings, additional PowerPoint lectures and videos will be assigned to supplement reading. Information from these additional sources will appear on tests and should appear in discussions.

### **Syllabus Quiz and Exit Survey Quiz (30 pts. each):**

During Week 1, each student will print this syllabus and familiarize herself/himself with its contents. The student will then take a brief quiz about its contents. The quiz is available in “Module 1” within “Modules” in Canvas. In the last regular week of class, students will write a short essay and will have the opportunity to discuss what eras and subjects they most enjoyed in New Mexico history, and also offer their input and critique on the elements of this course.

### **Weekly Quizzes (30 pts. each):**

Quiz material is drawn from the textbook and from any supplemental content posted by the instructor. Quizzes are not cumulative and will be specific to anything covered in the lesson materials for a given week. Each quiz shall consist of two kinds of questions: multiple-choice questions or true/false statement prompts. The quizzes will be available at 12:00 p.m. on the

Monday of the week of the quiz and will remain open until the due date Sunday, and students may take the quiz anytime during that time.

### **Weekly Discussion Board (20 pts. each):**

Students will participate in weekly discussions, and students will be required to have one original post on the instructor-selected topic and respond to at least one fellow students' original post each week. See Discussion Rules and Rubric on Canvas for specific details regarding expectations for the Discussion Board.

### **Proctored Midterm and Final Exams (125 pts. each):**

There will be a midterm and a final exam, counting for approximately 25% of your grade. The exams will be cumulative for each half of the semester. Thus, each will cover about four chapters of readings, quizzes, lectures, and written discussion board assignments. The format will be multiple choice and one essay.

These exams will be taken during the scheduled midterm and finals weeks and will be proctored. This means the student will have to make arrangements to do one of the following: take the exam at the CCC Testing Center, take the exam at a Testing Center of a local college outside of Clovis, or the student can pay a fee to use the online service Proctor U. Students are personally responsible to make arrangements to attend the midterm and final exam in one of the listed options, and the arrangements must be made at least one week beforehand.

Midterm Exam: Roberts Chapter 1-4, and Etulain Chapters 1-3 in the textbooks, videos, quizzes, PowerPoint lectures, and Discussion Board questions.

Final Exam: Roberts Chapter 5-10, and Etulain Chapters 4-12 in the textbooks, videos, quizzes, PowerPoint lectures, and Discussion Board questions.

### **Attendance Requirements and Participation:**

Attendance is required for all sessions of this course. When circumstances make attendance impossible, students should notify the instructor of their absence as soon as possible. Students are responsible for making sure they are caught up with the class lectures and assignments, so they are able to attend the next class session prepared.

Attendance will be recorded weekly, and this means that you must participate in the weekly assignments or you will be counted absent – even if you logged on, but did not participate or complete any assigned work. If you miss three weeks without participating, you will be in grave jeopardy of failing. If you have an illness or some other mitigating circumstance, you will need to contact me immediately to discuss your situation and make arrangements.

### **Remediation and Make-up:**

Student Success Programs: Clovis Community College offers students several free services staffed by specialists and tutors. These include: The Center for Student Success (room 171

where computers for student use are also available), the Writing Center (room 172), and many other resource for student success. Students may walk in, schedule appointments, or attend mini sessions.

Late assignments or quizzes will be accepted only on approval of the instructor. Computer failure and trips (personal or school related) are not an acceptable excuse for failure to turn in an assignment. Students have access to computers at CCC and any public library. All hotels provide Wi-Fi and/or have a business center that provides computers with internet access for those who do not have an electronic device with them. It is rare that internet access is not available so please do not try to use this as an excuse. If the assignment is late, it will accrue a late penalty of 50 percent the day after the assignment is due. Everyone is required to participate in discussions in a timely manner each week. It is not possible to complete this class with a passing grade without such participation. The beauty of an online class is that students can complete the assignments on their own time; because of this, the late assignment policy will be strictly enforced. This class is not a self-paced class and assignments have due dates. Trips are not excuses to ask for an extension; however, there are some situations that may call for an extension, but I will determine those.

### **Discussion Rules:**

Students must uphold a mature level of interaction with each other and with the instructor. Please respect other students when they respond to the learning group discussion. Part of this learning process includes the acquisition or honing of life skills associated with online collaboration as a group including a civil discussion of differences of ideas. Grades of students who fail to display appropriate behavior, decorum, respect, or kindness to each other will be adjusted accordingly (this includes responding to questions posed by other students). Student's original posts, as well as responses, must be relevant to the lead question for each discussion, failure to adhere to this will reflect negatively on the student's grade. Students must respond, on a separate day, with intelligence to other students' posts. Responses such as "Good job," "I really liked how you brought out..." "It is amazing how they were..." etc. are not acceptable response post (unless they are accompanied with more intelligent information), nor will responses that are simply questions to the author of the original post (unless accompanied by more intelligent information). These types of responses will not be considered as a response post and a zero will be given for those responses.

All original posts are due Thursday and at least one response is to be made on a separate day to another student's post, which are due Saturday of the week assigned. It is a general rule that the more a student participates in the discussion board the more the student learns; so, try to participate as much as possible. Be sure to check your Canvas regularly, checking in once a week will not be beneficial to students. It is expected that students respond to questions of their fellow students and the instructor. (See Group Discussion Rules and Rubric for more details.)

### **Starfish Early Alerts:**

Clovis Community College uses Starfish Early Alert as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC

email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at <http://www.clovis.edu/students/starfish.aspx> . If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

### **Withdrawal:**

If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. Instructors do not withdraw students. Dual credit students must contact their high school counselor.

### **Disputed grades:**

Students who disagree with a grade should consult the instructor.

### **Academic Dishonesty and Standards:**

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the college catalog. Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor’s evaluation of the severity of the dishonest act. Consult the college catalog for more information on the institutional policy on academic integrity.

### **Qualified Students with Disabilities:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

### **Copyright:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post

information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

**Technical Support:**

CCC Help Desk support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4747. Be sure to visit the Canvas Student Orientation site if you need help navigating our online classroom. You may also find answers to common questions / problems on Canvas FAQs.

**Help Desk Hours:**

Monday-Thursday 7 a.m. to 7 p.m.

Friday 7 a.m. to 4:30 p.m.

Interim, Monday-Friday 7 a.m. to 4:30 p.m.

**Computers on Campus:**

Computers for student use are available on campus in the Center for Student Success (room 171). Please call 575.769.4095 for more information. The Center is open Monday-Thursday from 8 a.m. to 8 p.m. and 8 a.m. to 4:30 p.m. on Fridays. It is closed weekends and holidays.

The employees in the Center are there to assist students and faculty with computer functions such as power-up, keyboard operations, printer operations, and software problem determination. They are not expected, however, to instruct students or be a substitute for a faculty member. Any help from assistants should be considered a suggested solution and may be different from the solution expected by the instructor. When in doubt, contact your instructor.

**Clovis Community College**  
**Music Appreciation: Western Music**  
**MUSC 1130**

**INSTRUCTOR:**

**E-MAIL:** Please use the online classroom email system.

**TEXT:** Listen to This, Fourth Edition, by Mark Evan Bonds  
ISBN: 978-0-13-447216-0

**MUSIC:** MyMusicLab.com

**MATERIALS REQUIRED:**

Online access, textbook, MyMusicLab account

**INSTRUCTOR AVAILABILITY & CONTACT INFO:**

Please use the online classroom email system and allow 24 hours for a response.

**COURSE DESCRIPTION:**

This course explores the ideas of music in society and its cultural relevance and is designed to increase the students' appreciation of music as well as to enhance their listening skills. Students are introduced to various periods, styles, and composers of music and become acquainted with knowledge and appreciation of Western music from various cultures and times.

**COURSE OBJECTIVES:**

1. The student will develop a vocabulary of musical terms, and be able to describe music using those terms.
2. The student will learn the elements of music and through listening to music, identify those elements.
3. The student will identify by sight and sound, the instruments of the orchestra.
4. When attending concerts and other listening experiences, the student will analyze and interpret the music heard.
5. The student will demonstrate knowledge of composers, their music and their relationship to historical periods: Middle Ages, Renaissance, Baroque, Classical, 19th Century (Romantic), 20th Century (Modern).
6. Through comparison, students will discover the influence of diverse historical and cultural aspects upon the music created by a composer.
7. The students will recognize how music played and plays a political, social, and cultural role.
8. The students will identify well-known pieces and the historical and social context in which they were composed.



**ONLINE COURSE GUIDELINES:**

To see the latest guidelines for all online courses, please see the Online Course Guidelines located within your Canvas course.

**ONLINE COURSE ATTENDANCE:** In an online course, “attendance” is recorded when a student logs into class AND does at least one other action (such as turning in an assignment or posting a message). Simply logging in is not enough to count as “attendance.” Attendance is required at all sessions in each course for which the student is enrolled. Consult the college catalog for specific information regarding limits for absences. Students on financial aid and VA programs may have additional attendance requirements or restrictions. Check with the Financial Aid / VA Office for more information.

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**QUALIFIED STUDENTS WITH DISABILITIES:**

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**ONLINE TUTORING:**

CCC now offers free online tutoring in most academic subjects. Access BrainFuse through [Pathway](#) for a live online session with a professional tutor. Click [HERE](#) to see how to access Brainfuse online tutoring.

**COPYRIGHT:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

**SAFEGUARDS:**

Back up all work in a memory device and make a hard copy; computers are not infallible. It is the student’s responsibility to ensure that his/her computer is functioning properly.

**NETIQUETTE:** Netiquette is using good manners in cyberspace. Since most of our communication will be in text, be sure your words express the proper tone. Remember e-mail can be read by anyone. Making personal attacks or sending threats is unacceptable and will be reported per the guidelines up to and including administrative withdrawal from the course. Whether you are in a chat room, writing an e-mail or posting to a discussion area, remember to use proper netiquette and be considerate of others. If you would like to read more on the subject of netiquette, use the links below.

<http://www.iwillfollow.com/email.htm>

<http://www.albion.com/netiquette/corerules.html>

**EMERGENCY ALERT:** Since our class is online, service interruptions are very unlikely. In case of an unscheduled Canvas outage, please submit homework via email to my email address (listed above). However, in case of relevant campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

**TECHNOLOGY REQUIREMENTS:** Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please click here to see basic computer specifications for Canvas. Please keep in mind that computers are available for student use in the library.

**TECHNICAL SUPPORT:** CCC Help Desk support is available Mon – Fri, 8:00 am – 4:30 pm at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom.

You may also find answers to common questions / problems on [eCampus](#) and click on the tab titled “Technical Support.” If the hyperlink does not work, please enter <http://www.clovis.edu/Type4.asp?pageid=ecindex> into your browser.

**Proctoring INFORMATION:** Most online courses require a proctor for exams. The following are CCC approved proctor options:

- CCC's Testing Center (No fee for CCC students // ID required)
- Military Education Centers (may have a fee // DoD ID required)
- Testing Centers at other Colleges / Universities (may have a fee // ID required)

If you live within 50 miles of Clovis, NM, you will be required to take your proctored exam at CCC's Testing Center or use ProctorU. If you live 51+ miles from Clovis, NM you may use any of the above proctor options. Students with a valid DoD ID card may use a military education center, if desired.

It is the student's responsibility to find a suitable proctor, make testing arrangements, and pay any associated fees for proctoring services. Be aware that ALL proctors require a valid photo ID, some proctors charge a fee, and some proctoring options require a webcam.

Dual credit students should contact their instructor for special instructions.

Students must report their proctor choice to their instructor. Please refer to your syllabus and instructor's directions for more details, deadlines, and further information. If you need CCC's Proctor Approval Form, it is linked in Online Course Information.

**COURSE REQUIREMENTS** (specific instructions for ALL Discussions, Quizzes and Assignments may be found in the modules):

**1. FIVE DISCUSSIONS (20 points each)** Read the discussion instructions carefully, as they vary greatly. Six discussions are available and the lowest score will be dropped.

**2. FIVE QUIZZES (40 points each)** You will be given 3 days to find the time to take each Quiz. Six quizzes will be given, and the lowest score will be dropped. No make up quizzes will be given unless you have already missed one quiz and you have a seriously good reason for missing the 2nd quiz. Quizzes will include information from audio/video lectures, reading assignments, and listening selections. If you do everything on the study guide, you will be well prepared for the quiz.

**3. TWO PROJECTS (40 points each).** The completion of these projects will demonstrate your understanding of music elements and history as covered by the four competencies of the Humanities and Fine Arts. For the Composer Project, you will choose from a list of paired composers. Your paper will include biographies for each and a compare and contrast section. Use the format described in the assignment instructions. For the Listening Project, you will use the works listed that are associated with the composers you research for the Composer Project. Your paper will include individual descriptions of the pieces and a compare and contrast section. Use the format described in the assignment instructions.

**4. PERFORMANCE RESPONSE PAPER (20 points).** You may attend any live concert, musical, opera, or ballet, anywhere, just check with me first. Concerts in the Clovis area are listed in the Calendar and are already approved. Many concerts are free, so plan ahead. Use the format described in the assignment instructions. Papers may be turned in at anytime before the due date. Right after attending a performance is a good time to write it and turn it in.

**SUBMITTING ASSIGNMENTS:**

All assignments must be submitted in the online classroom. Pay close attention to due dates. For simplicity, all assignments are due on Saturdays at 11:59 p.m. except for the extra credit. Please note that all online course messages and submissions are automatically date and time stamped using MST. Make sure you know what time it is at your house when it is 11:59 PM in Clovis, NM.

**MAKE-UP WORK:**

No make-up work is available for this course but I DO drop your lowest Quiz score and your lowest Discussion score.

**GRADING POLICY:**

Grades in this course will be based on the following:

**ASSIGNMENTS: POINTS /PERCENT OF COURSE GRADE:**

5 Discussions (20 pts each)

100 25%

5 Quizzes (40 pts each)

200 50%

2 Research Projects (40 pts each)

80 20%

1 Response Paper (20 pts)

20 5%

Total Points 400

**GRADING SCALE:** Student final grades are based on overall performance in class.

900-1000 points	A
800-899 points	B
700-799 points	C
600-699 points	D
599 and below	F

**EXTRA CREDIT:**

Extra Credit is available in the form of an additional Performance Response paper (20 points) and filling out the Online Course Evaluation (5 points).

**LATE WORK:**

All assignments (except quizzes) will be open for an additional week after the due date. Late assignments will receive a one-point deduction per day. No more than five points will be deducted. Late is always better than never!

### COURSE SCHEDULE / CALENDAR

<b>Date / Week #</b>	<b>Week # / Module #</b>	<b>Assignment</b>	<b>Homework</b>
<b>Aug 20-25</b>	<b>1</b>	Discussion 1 Quiz 1	The Elements of Music
<b>Aug 27-Sept 1</b>	<b>2</b>	Discussion 2	Part 1: The Middle Ages Part 2: The Renaissance
<b>Sept 3-8</b>	<b>3</b>	Middle Ages and Renaissance Quiz 2	
<b>Sept 10-15</b>	<b>4</b>	Discussion 3	Part 3: The Baroque Era
<b>Sept 17-22</b>	<b>5</b>	Baroque Quiz 3	
<b>Sept 24-29</b>	<b>6</b>	Discussion 4	Part 4: Classical Era
<b>Oct 1-6</b>	<b>7</b>	Classical Quiz 4 Composer Project	
<b>Oct 8-13</b>	<b>8</b>	Discussion 5	Part 5: 19 <sup>th</sup> Century
<b>Oct 15-20</b>	<b>9</b>	19 <sup>th</sup> Century Quiz 5 Listening Project	
<b>Oct 22-27</b>	<b>10</b>	Discussion 6	Part 6: Since 1900 (20 <sup>th</sup> Century)
<b>Oct 29 – Nov 3</b>	<b>11</b>	Course Evaluation	
<b>Nov 5-10</b>	<b>12</b>	20 <sup>th</sup> Century Quiz 6	
<b>Nov 12-17</b>	<b>13</b>		
<b>Nov 19-24</b>	<b>14</b>	Performance Response	
<b>Nov 26-Dec 1</b>	<b>15</b>		
<b>Dec 3-8</b>	<b>16</b>	Performance Response (Extra Credit)	

**CLOVIS COMMUNITY COLLEGE**

**Spanish I**

**Spanish 1110 (online)**

**Spring 2019**

**(Syllabus subject to change)**

**INSTRUCTOR:**

**CONTACT OFFICE:**

**OFFICE PHONE:**

**Message Phone:**

**OFFICE HOURS:** Monday & Tuesday 1:00-3:00, Wednesday 1:00-2:00 or by appointment

**E-MAIL:** Canvas E-Mail

**MATERIALS REQUIRED:** All required materials will be utilized throughout the course.

- Textbook *¡Arriba! Comunicación y Cultura*, sixth edition. (myspanishlab will NOT be used in this class) ISBN 0134020650
- Students **must** have a web cam (**final exam will require a web cam**)
- Students will need a computer
- Students must have reliable internet access
- Voice recorder with upload capability

**COURSE DESCRIPTION:**

Designed for students with little exposure to Spanish, this course develops basic listening, speaking, reading, and writing skills and basic intercultural competence in interpretive, interpersonal, and presentational modes of communication at the Novice Level of proficiency based on ACTFL guidelines. During this course, students perform better and stronger in the Novice Mid-level while some abilities emerge in the Novice High range. This is an introductory course aimed at helping the student to communicate in Spanish in everyday familiar situations via recognition and production of practiced or memorized words, phrases, and simple sentences.

**COURSE OBJECTIVES/ Student Learning Outcomes:** Upon completion of this course, students will have:

1. Students can communicate on very familiar topics using a variety of words and phrases that they have practiced and memorized.
2. Students can present information about themselves and some other very familiar topics using a variety of words, phrases, and memorized expressions.
3. Students can write short messages and notes on familiar topics related to everyday life.
4. Students can often understand words, phrases, and simple sentences related to everyday life.
5. Students can recognize pieces of information and some- times understand the main topic of what is being said.
6. Students can understand familiar words, phrases, and sentences within short and simple texts related to everyday life.
7. Students can sometimes understand the main idea of what they have read.
8. Learned the diversity of Hispanic culture.

**The standards for foreign language learning include:**

- Communication – in a language other than English
- Culture – Gain knowledge and understanding of other cultures
- Connections – Connect with other disciplines and acquires information
- Comparisons – Develop insight into the nature of language and culture
- Communities – Participate in multilingual communities at home and around the world

**ATTENDANCE REQUIREMENTS:** Seeing as this is an online class, you, the student, are responsible for checking canvas on a regular basis. I understand that life is not always sunshine and roses sometimes circumstances arise that may make it impossible for you to check in, for this reason all modules and the assignments will be open and available beginning January 26, 2019 (except for midterm and final quizzes/tests). If you want to get ahead or need to get ahead you can. However, seeing as all assignments are opened way ahead of time late assignments will not be accepted. Assignments are opened for your benefit, get ahead and you will not need to worry about missing an assignment. ***Students are responsible for all work assigned by the instructor.***

\*The circumstances which may be excused are those due to serious medical reasons and for professional functions, which require the attendance of the student. In both cases, proper documentary evidence satisfactory to the instructor and the Foreign Languages Department must be provided.

**NOTE:** Missed assignments will **NOT** be excused at the end of the semester for non-submission earlier in the semester even if belated proof is provided. A ‘ZERO’ will really hurt your grade.

**SAFEGUARDS:**

**Always back up all work on an external drive (flash drive, thumb drive, etc.) and keep a printed copy; computers are not infallible. It is the student’s responsibility to ensure that his/her computer is functioning properly.**

**WITHDRAW:**

If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. **Instructors do not withdraw students.** Dual credit students must contact their high school counselor.

**GRADING SCALE:** Letter grades for the course will be assigned based on the following:

100 – 90 %	A
89 – 80%	B
79 – 70%	C
69 – 60%	D
59 – 0%	F

**ASSIGNMENTS:** (70%) All assignments, projects, participation in class, readings, quizzes and communications will fall into the assignment category.

Assignments are due on Tuesday of each week, except for the first and the last weeks.

**\*\*In the modules, the icon for the assignments will appear as a quiz icon but this format is solely for speedy grading purposes.**

**Final Exam: (30%)** A comprehensive exam will be given at the semester.

**\*\* NOTE:** *No late homework will be accepted, unless prior contact has been made with instructor about extenuating circumstances.*

**Students are required to have a Web Cam**

**Class participation, and class work:** Participation is an essential part of the class. Points will be given for participation in target language. **Points will be taken away for making little to no attempt to use target language.**

**Grammar and vocabulary quizzes/tests:** These assessments will be written and based on vocabulary and grammar topics. A comprehensive test may be given at the end of each unit of the text.

**Listening and speaking:** Listening assessment may include: dictations, storytelling, conversations, and music. Speaking assessments may include: reading, interviews, question and answer, skits or presentations. The speaking assessments will be graded on the appropriateness, complexity, and comprehensibility of answers as well as the grammar and vocabulary usage and their pronunciation.

**Reading and Writing:** Assessment for the writing grade may include: sentences, compositions, paragraphs and projects. Assessment for the reading grade may include: comprehension exercises, poetry, and magazines.

**Discussions:** Comments and responses must be at least 50 words long. Student must post their initial post then respond to two other classmates. If your initial post or post to your peers is shorter than 50 words points will be deducted from your grade.

**Submission of assignments:**

>All written assignments must be submitted as **.rtf, .doc, or .docx.**

\*\*\*\**Google Docs, Prezi* or other forms of submissions will not be accepted and will receive a zero if submitted in these formats or in a format that I cannot open.

>For reading assignments they must be submitted using one of the following formats:

**.mp3 .mp4 or .wma or canvas recording**

**Google Chrome works best with Canvas.**

If assignments are not submitted in one of these formats and I cannot open them, the assignment will receive a zero.

**ProctorU** (Section required for use of a proctored exam):

Some online courses will require a proctor for exams. This means that if you live within 50 miles of Clovis, you will be required to take the final exam in the CCC Testing Center. If you live more than 50 miles from Clovis, you will have the option of driving here or finding a proctor site to take the exam. You may use an **authorized testing facility**, an approved Military



Education Center, or ProctorU for your final exam. If you are using a site other than ProctorU, it must be submitted and approved by the instructor no later than the date specified on the syllabus. It is the student's responsibility to find a suitable proctor. Once the two-part form is completed, students should return the form to their instructor for approval. Examinations will not be submitted to a proctor until the proctor has been approved. If you are using ProctorU, you do not need to submit the Proctor Approval Form. Instead, email your instructor to notify him/her that you will be using ProctorU.

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- ProctorU does charge a fee for their services; it is the student's responsibility to register and pay for these services.
- ***Authorized testing center does not include: teachers, friends, instructors/professors, libraries etc.*** Request for use of a testing center other than ProctorU must be submitted no later than April 2<sup>nd</sup> and approved no later than April 21<sup>st</sup>.

**GENERAL INFORMATION:** Consult the current semester calendar for information concerning course withdrawal deadlines.

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**TECHNOLOGY REQUIREMENTS**

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Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

**ACADEMIC DISHONESTY:** Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the college catalog. Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor's evaluation of the severity of the dishonest act. Consult the college catalog for more information on the institutional policy on academic integrity. **If you are wondering if you are committing plagiarism, please ASK ME!**

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**\*Note:** all work turned in should reflect the student's own words and abilities. **Use of translators** (people, mechanical or on-line) **is not allowed**, and is defined as plagiarism (claiming another's work as one's own), and will receive the same consequences as cheating. Your final will reflect how much time and effort you have put forth in this class.

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**Help Desk Hours:** Monday-Thursday 7 a.m. to 7 p.m. Friday 7 a.m. to 4:30 p.m. Interim, Monday-Friday 7 a.m. to 4:30 p.m.

### **COMPUTERS ON CAMPUS:**

Computers for student use are available on campus in the Center for Student Success (room 171). Please call 575.769.4095 for more information. The Center is open Monday-Thursday from 8 a.m. to 8 p.m. and 8 a.m. to 4:30 p.m. on Fridays. It is closed weekends and holidays.

The employees in the Center are there to assist students and faculty with computer functions such as power-up, keyboard operations, printer operations, and software problem determination.

They are not expected, however, to instruct students or be a substitute for a faculty member. Any help from assistants should be considered a suggested solution and may be different from the solution expected by the instructor. When in doubt, CONTACT YOUR INSTRUCTOR.

### Course Calendar Spring 2019

Assignments can be completed ahead of time.

<b>Due Date</b>	<b>Module #</b>	<b>Module Title</b>	<b>Reading Assignment /Discussion Assignments / Quiz / Exam</b>
<b>January 19</b>	<b>Getting started / 1</b>	Getting Started/ Welcome Introductions	View and read items listed in the Getting started module. Complete assignments in Module 1
<b>January 22</b>	<b>2</b>	The Basics	Complete assignments in Module 2
<b>January 29</b>	<b>3</b>	I Like Learning New Words	Complete assignments in Module 3
<b>February 5</b>	<b>4</b>	Ser and Estar	Complete assignments in Module 4
<b>February 12</b>	<b>5</b>	Tener and Familia	Complete assignments in Module 5
<b>February 19</b>	<b>6</b>	AR Verbs	Complete assignments in Module 6
<b>February 26</b>	<b>7</b>	ER and IR Verbs	Complete assignments in Module 7
<b>March 5</b>	<b>8</b>	Build New Vocabulary	Complete assignments in Module 8
<b>March 12</b>	<b>9</b>	Midterm	Complete assignments in Module 9
<b>March 19</b>	<b>10</b>	Family Tree	Complete assignments in Module 10
<b>March 26</b>	<b>XX</b>	Spring Break	Nothing due
<b>April 2</b>	<b>11</b>	Telling Time	Complete assignments in Module 11
<b>April 9</b>	<b>12</b>	Listening Practice	Complete assignments in Module 12
<b>April 16</b>	<b>13</b>	Cultural Report	Complete assignments in Module 13
<b>April 23</b>	<b>14</b>	Cultural Activity	Complete assignments in Module 14

<b>May 1</b>	<b>15</b>	Quizizz	Complete Quizizz Practice for Final
<b>May 8</b>	<b>16</b>	Final Exam	Complete Final

## Clovis Community College Online Course Guidelines

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**NETIQUETTE:** Netiquette is using good manners in cyberspace. Since most of our communication will be in text, be sure your words express the proper tone. Remember e-mail can be read by anyone. Making personal attacks or sending threats is unacceptable and will be reported per the guidelines up to and including administrative withdrawal from the course. Whether you are in a chat room, writing an e-mail or posting to a discussion area, remember to use proper netiquette and be considerate of others. If you would like to read more on the subject of netiquette, use the links below.

<http://www.iwillfollow.com/email.htm> <http://www.albion.com/netiquette/corerules.html>

Rude, disrespectful, or verbally abusive messages will not be tolerated at any time under any circumstances. Sometimes we write email messages when we are upset and then hastily click "send." It is important to control that urge. The Student Code of Conduct can be found in its entirety in the Student Handbook. **Students may be administratively withdrawn for netiquette violations.**

Revised January 2018

**ACADEMIC DISHONESTY:**

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the college catalog. Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor's evaluation of the severity of the dishonest act. Consult the college catalog for more information on the institutional policy on academic integrity.

**EMERGENCY ALERT:**

Since our class is online, service interruptions are very unlikely. However, in case of campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

**TECHNOLOGY REQUIREMENTS**

Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please click here to see basic computer specifications for Canvas.

**TECHNICAL SUPPORT:** CCC Help Desk support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the Canvas Student Orientation site if you need help navigating our online classroom. You may also find answers to common questions / problems on Canvas FAQs. To see the Help Desk's hours of operation, please visit [www.clovis.edu/helpdesk](http://www.clovis.edu/helpdesk).

**COMPUTERS ON CAMPUS:**

Computers for student use are available on campus in the Center for Student Success (Room 171) or the Library. Staff will not instruct and/or tutor students regarding assignments. When in doubt, CONTACT YOUR INSTRUCTOR. Students needing tutoring assistance should go to the Tutoring Center (Room 415A).

**PROCTORING INFORMATION:** Most online courses require a proctor for exams. The following are CCC approved proctor options: \* CCC's Testing Center (No fee for CCC students // ID required) \* Military Education Centers (may have a fee // DoD ID required) \* Testing Centers at other Colleges / Universities (may have a fee // ID required) \* ProctorU (has a fee // webcam required // 2 forms of photo ID required)

If you live within 50 miles of Clovis, NM, you will be required to take your proctored exam at CCC's Testing Center or use ProctorU. If you live 51+ miles from Clovis, NM you may use any of the above proctor options. Students with a valid DoD ID card may use a military education center, if desired. Revised January 2018

It is the student's responsibility to find a suitable proctor, make testing arrangements, and pay any associated fees for proctoring services. Be aware that ALL proctors require a valid photo ID, some proctors charge a fee, and some proctoring options require a webcam.

Dual credit students should contact their instructor for special instructions.

Students must report their proctor choice to their instructor. Please refer to your syllabus and instructor's directions for more details, deadlines, and further information. If you need CCC's Proctor Approval Form, it is [linked here](#).

**Clovis Community College**  
**ENG 102 (ENGL 1110) Composition I Sec.**  
**102 (Wednesdays, 6:00-8:30 p.m.) Spring,**  
**2019**

**INSTRUCTOR:**  
**OFFICE:**  
**OFFICE PHONE:**  
**MESSAGE PHONE:**  
**OFFICE HOURS:** .  
**E-MAIL:**

**TEXTS:** Richard Bullock, Michal Brody, and Francine Weinberg, *The Little Seagull Handbook*, 3<sup>rd</sup> Edition, **ISBN: 978-0-393-60263-0**.  
 James S. Miller, editor, *Acting Out Culture: Readings for Critical Inquiry*, 4<sup>th</sup> Edition, **ISBN: 978-1-319-05674-2**.

**MATERIALS REQUIRED:**

- Jump-drive or external hard drive to save electronic files
- Three-ring binder
- Spiral notebook or composition book
- College-level dictionary-thesaurus combination
- Writing materials (i.e., pens, pencils, highlighters, etc.)
- Access to an updated Internet browser (e.g., Mozilla Firefox, Chrome, Microsoft Edge, etc.)
- Access to a reliable Internet connection
- Access to Microsoft Office (2007 or newer)
- Access to a PDF reader
- A working Canvas account
- A working CCC e-mail account (located in Pathway)

**COURSE DESCRIPTION:**

In this course, students will read, write, and think about a variety of issues and texts. They will develop reading and writing skills that will help with the writing required in their fields of study and other personal and professional contexts. Students will learn to analyze rhetorical situations in terms of audience, contexts, purpose, mediums, and technologies, and apply this knowledge to their reading and writing. They will also gain an understanding of how writing and other modes of communication work together for rhetorical purposes. Students will learn to analyze the rhetorical context of any writing task and compose with purpose, audience, and genre in mind. Students will reflect on their own writing processes, learn to workshop drafts with other writers, and practice techniques for writing, revising, and editing.

**COURSE OBJECTIVES:**

1. Analyze communication through reading and writing skills.
2. Employ writing processes such as planning, organizing, composing, and revising.
3. Express a primary purpose and organize supporting points logically.
4. Use and document research evidence appropriate for college-level writing.
5. Employ academic writing styles appropriate for different genres and audiences.
6. Identify and correct grammatical and mechanical errors in their writing.

**DEPARTMENT OBJECTIVES:**

1. Students will become familiar with the process of writing.



2. Students will develop and refine critical listening, reading, and writing skills.
3. Students will analyze and evaluate oral and written communication in terms of situation, audience, purpose, aesthetics, and diverse points of view.
4. Students will express a primary purpose in a compelling statement and order supporting points in a logical and convincing manner.
5. Students will use effective rhetorical strategies to persuade, inform, and engage.
6. Students will employ writing processes such as planning, collaborating, organizing, composing, revising, and editing to create presentations using correct diction, syntax, grammar, and mechanics.
7. Students will integrate research correctly and ethically from credible sources to support the primary purpose of communication.
8. Students will engage in reasoned civic discourse while recognizing the distinctions among opinions, facts, and inferences.
9. Students will engage with and utilize information technology in order to write papers, conduct research, watch videos, and explore issues relevant to this course.

### **COMMON ASSUMPTIONS OF THIS COURSE:**

1. Writers learn to write by writing, plain and simple.
2. Writing is a process rather than a set of skills that needs to be mastered. Moreover, writing is a circular process that requires revision and multiple drafts.
3. Writers must read! Writing is informed by reading and responding to what writers have read.
4. Writers should read their own work to other writers in order to receive constructive feedback. This feedback is crucial to developing mature academic essays. In other words, writing does not take place in isolation. It requires that writers interact with their peers in order to develop mature (and engaging) writing.

### **SYLLABUS CLAUSE & CONTRACT:**

This syllabus may be revised and/or adapted throughout the semester to better serve the needs of the class. The instructor may assign additional reading and/or assignments as needed—all within reason, of course. Additionally, the decision to remain in this class upon receipt of this syllabus serves as students' acceptance of this syllabus as a binding contract, meaning they agree with the terms set forth and the expectations of them as members of the class.

### **ATTENDANCE REQUIREMENTS:**

Attendance is required at all sessions in each course. When circumstances make attendance impossible, you should notify the instructor of your absence. You are responsible for making sure you are caught up with the class lectures and assignments, so you're able to attend the next class session prepared. Please note: Students are given points for participation and attendance. This means you will lose points if you are absent, leave early, or are tardy to class.

### **WITHDRAW:**

If you are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, you should withdraw from the class after you have spoken with your instructor and academic advisor. **Instructors do not withdraw students.** Dual credit students must contact their high school counselor.

### **STUDENT EMAIL:**

Students are responsible for making sure they have a working CCC e-mail account. All official business will be conducted through this CCC e-mail account and/or Canvas messaging. If you are having trouble

with your CCC e-mail account, please contact the Help Desk at **575.769.4969**.

### **COMMUNICATION & RESPONSE:**

The Canvas e-mail/messaging system will be used throughout the semester. If you need to contact me, please e-mail me using the Canvas messaging system. I will try to respond to messages within twenty-four (24) hours during the regular workweek (Monday through Friday). However, please allow for forty-eight (48) hours during weekends, official breaks, and campus holidays.

### **CANVAS SHELL:**

Clovis Community College requires that all instructors utilize a Canvas shell for their courses. That means this course will use Canvas. All outside readings not included in core textbooks, assignments (big and small), course updated, and so on will be posted/uploaded to the Canvas shell for this course. With that said, it is the student's responsibility to ensure s/he is able to log on to Canvas, download outside (assigned) readings, upload assignments, view the gradebook, and contact the professor via Canvas's messaging function.

### **TECHNOLOGY REQUIREMENTS:**

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### **STARFISH:**

Clovis Community College uses **Starfish Early Alert** as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit "Starfish for Students" at <http://www.clovis.edu/students/starfish.aspx> . If you need assistance with Starfish, email the Help Desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

### **MAKE-UP & LATE WORK:**

No make-up or late work will be accepted for this course. This is due to the amount of time offered to students to complete this course's assignments. However, some extenuating circumstances may materialize, making it impossible to submit work prior to the established deadline. You are responsible for contacting me well in advance of the established deadline, notifying me that you will need an extension. That means you should contact me within twenty-four (24) to forty-eight (48) hours prior to an assignment's final deadline. Students are also responsible for submitting completed work that meets college-level expectations.

### **GRADING POLICY:**

Generally, it takes me about one week (i.e., seven business days) to finish providing constructive

feedback and grades on rough drafts and small assignments. However, please allow for at least two to two and a half weeks for grades on final drafts written in this class. If you have any questions or concerns about grades or my feedback, please feel free to contact me.

Final grades will be available on the Web within five (5) days from the last day of the semester. You can view your final grades in Pathway.

**ASSIGNMENTS: POINTS /PERCENT OF COURSE GRADE:**

Short Story (Any Genre; 4-5 pp.)	100
Narrative Essay (Topic: Connections; 5 pp.)	150
Ethnographic (Research) Essay (5-6 pp.)	200
Argumentative Research Essay (5-6 pp.)	250
Oral (Research) Presentation (5 mins.)	150
Attendance and Participation	150
<b>TOTAL</b>	<b>1,000 pts.</b>

**GRADING SCALE:** A student's final grades are based on overall performance in class.

90–100%	A
80–89%	B
70–79%	C
60–69%	D
59% and below	F

**QUALIFIED STUDENTS WITH DISABILITIES:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (575.769.4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

**COPYRIGHT:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

**EMERGENCY ALERT:**

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CCC Help Desk (Room 119) support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575.769.4969. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom. You may also find answers to common questions / problems on [Canvas FAQs](#). To see the Help Desk hours of operation, please visit <http://www.clovis.edu/helpdesk/>.

### COURSE SCHEDULE:

*The course schedule/calendar is subject to change, as the instructor finds it necessary. If changes are made, students are responsible for taking note of any changes that are announced in Canvas. Make it a habit to communicate with your fellow students and/or check Canvas announcements regularly.*

*Readings and/or assignments must be completed (and submitted) by the dates listed in the schedule.*

**Abbreviations:** *AOC* – Acting Out Culture (C) – Canvas *LSH* - Little Seagull Handbook

Date Range	Week #	Reading Assignment(s), Lecture(s), Etc.	Homework
JAN. 16	1	Introduction to Syllabus Intro to Textbooks Intro to Class Intro to Short Story Read Flash Fiction	Obtain texts Complete readings listed under Week 2
JAN. 23	2	<b>Read (for class)</b> Viramontes, “Cariboo Café” (C); Wolff, “Bullet in the Brain” (C); Richards, “Strays” (C); Mirrorshades” (C); Kiesbye, “Hitlertown” (C); and Packer, “Brownies” (C) Elements of Short Fiction (Lecture) Prewriting Exercise (Not Graded) Editing and Revision (Lecture)	Work on short story Complete readings listed under Week 3
JAN. 30	3	<b>Read (for class)</b> Alang, “The Comfort of a Digital Confidante” (AOC); Duhigg, “How Companies Learn Your Secrets” (AOC); and Lovenheim, “Won’t You Be My Neighbor?” (AOC). <b>Also read (for class)</b> <i>LSH</i> pp. 58–62, 17–29, and 314–50. Intro to Narrative Essay Assignment Elements of Narrative Nonfiction (Lecture) Paragraph and Sentence Development (Lecture)	<b>Submit Short Story (Canvas – Jan. 30 @ 11:59 p.m.)</b> Begin working on narrative essay Complete readings listed under Week 4
FEB. 06	4	<b>Read (for class)</b> <i>LSH</i> “Language,” pp. 351–385 Prewriting Exercise (Not Graded) Titling Work (Lecture) The Art & Science of Language Choice (Lecture) Snippets from <i>Terms and Conditions May Apply</i> (TBD)	Work on narrative essay Complete readings listed under Week 5
FEB. 13	5	<b>Read (for class)</b> <i>LSH</i> “Punctuation/Mechanics,” pp. 386–416. (+Lecture)	Work on narrative essay

FEB. 20	6	<b>Work day (Bring resources, papers, etc. to class)</b>	<b>Submit Narrative Essay (Canvas – Feb. 20 @ 11:59 p.m.)</b> Complete readings listed under Week 7
FEB. 27	7	<b>Read (for class)</b> Dyson, “Understanding Black Patriotism” (AOC); Johnson, “Unspeakable Conversations” (AOC); Bosch, “Things We Eat Alone” (AOC); Kozol, “Preparing Minds for Markets” (AOC); Tirado, “You Get What You Pay For” (AOC); and McBee, “The Truck Stop” (AOC). Intro to Ethnographic Essay (Part I)	Begin working on ethnographic essay Complete readings listed under Week 8
MAR. 06	8	<b>Read (for class)</b> “Doing Ethnographies” (C) and “A Simple Guide to Ethnography” (C) Intro to Ethnographic Essay (Part II) Topic Selection for Ethnography (list handout) Intro to Research	Work on ethnographic essay Complete readings listed under Week 9
MAR. 13	9	<b>Read (for class)</b> LSH pp. 6–8, 43–53, 83–88, and 90–118. Intro to Research (Lecture, Part II) Intro to APA (Lecture)	Work on ethnographic essay
MAR. 20	10	<b>Work day (Bring resources, papers, etc. to class.)</b>	<b>Submit Ethnographic Essay (Canvas – Mar. 20 @ 11:59 p.m.)</b>
<b>MAR. 27</b>	<b>11</b>	<b>SPRING BREAK</b>	<b>SPRING BREAK</b>
APR. 03	12	Intro to Argumentative Research Essays Topic Selection (list h/o) APA Refresher	Begin working on argumentative research essay
APR. 10	13	AXES Method, Thesis Statements, Transitions, Introductions, and Conclusions (Lecture + H/Os) Selecting Relevant AOC readings	Work on argumentative research essay

APR. 17	14	Conducting Research in Databases Conducting Research on the Net APA Refresher	Work on essay
APR. 24	15	Logical Fallacies, Bias, Stereotypes, Clichés, Language(s), Etc. (Lecture) APA Refresher	Work on essay
MAY 01	16	<b>Work day</b> Intro to Oral Presentation Presentations 101 (YouTube videos)	<b>Submit Argumentative Research Essay (Canvas – May 01 @ 11:59 p.m.)</b> Work on and complete oral presentation for last day of class
<b>MAY 08</b>	<b>17</b>	<b>ORAL (RESEARCH) PRESENTATION</b>	<b>PRESENTATION DUE WED., MAY 08</b>

**CLOVIS COMMUNITY COLLEGE**  
**Fundamentals of Piano for Non-Majors/MUSC 1220**  
**Spring, 2019**

**CLASS:** Tuesdays 6-7:40

**INSTRUCTOR:**

**Message Phone:**

**OFFICE HOURS:** Tuesday: 5:30-6:00 p.m. (For other times, please make an appointment.)

**E-MAIL:**

**TEXT:** Adult Piano Adventures I  
ISBN: 9781616773021

**MATERIALS REQUIRED:**

Students should have the use of a playable piano, preferably acoustic. Electronic keyboards can also be used. All students will have the opportunity to practice every Tuesday before class from 5:30-6:00 p.m. in the piano classroom. Additionally, students will need to purchase Adult Piano Adventures I, a practice journal, note book, a pencil with eraser, a metronome (available as a free app or online), and a flash drive. Staff paper can be downloaded off the internet.

**COURSE DESCRIPTION:**

This course will include instruction for non-music majors in beginning keyboarding skills. Students will develop their keyboarding skills through practice and study of fundamentals.

**CLASS GOAL:**

To cultivate an ongoing awareness and appreciation of individual growth in music with emphasis on piano as a tool and instrument for the process.



## STUDENT LEARNING OUTCOMES:

1. Develop technical skills in both hands to allow for ease in movement around the keyboard.
2. Develop growth in reading rhythmic melodic and harmonic music.
3. Demonstrate improved performance ability.
4. Demonstrate knowledge of all major and minor scales, triads, chord progressions, and four-part harmony.
5. Explain the importance of proper keyboarding practices.

## ATTENDANCE REQUIREMENTS:

Attendance is required at all sessions in each course. When circumstances make attendance impossible, students should notify the instructor of their absence. You are responsible for making sure you are caught up with the class lectures and assignments, so that you are able to attend the next class session prepared.

**Attendance is very important.** There are circumstances, which may arise, but if at all possible, students should please attend. To be eligible for an A, students should miss no more than 2 classes, for a B, no more than three, for a C or D, no more than 4.

*Note:* If students notice they are falling behind, they should not just “disappear.” Instead they should communicate with the instructor to see if something can be worked out. If a solution cannot be reached, students should *withdraw from the class*.

## WITHDRAW:

If you are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, you should withdraw from the class after you have spoken with your instructor and academic advisor. **Instructors do not withdraw students.** Dual credit students must contact their high school counselor.

## STUDENT EMAIL:

Email will be the primary means of communication outside of class time so make sure to check the student email account regularly.

## CANVAS SHELL

Students may check their grades posted in Canvas. Please check assignments on Canvas every week to access supplemental information and links directed by the instructor.

## TECHNOLOGY REQUIREMENTS

Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please [click here](#) to see basic computer specifications for Canvas. Please keep in mind that computers are available for student use in the library.

## COMPUTERS ON CAMPUS:

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To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit "Starfish for Students"

at <http://www.clovis.edu/students/starfish.aspx> ([Links to an external site.](#))[Links to an external site.](#). If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

### **MAKE-UP WORK:**

Students may make-up one quiz. Arrangements must be made with the instructor in advance.

### **CLASSROOM ETIQUETTE:**

All cell phones are required to be off or on vibrate mode in the classroom to be respectful of other students and the teacher.

### **GRADING POLICY:**

A 100 point system is distributed as follows:

• Quizzes (2)	20
• Composer Project	50
• Practice Journal Review (2@ 25 points each)	50
• Weekly participation (includes check on progress)	140
• Mid-Term conference/presentation	50
• Cultural Art and Paper	10
• Final Performance	80
Total:	400

### **GRADING SCALE:**

A = 90+                      360-400 points = A

B = 80-89                    320-359 points = B

C = 70-79                    280-319 points = C

D = 60-69                    240-279 points = D

F = 59 and below

A minimum of 60 percent must be earned to receive course credit.

Random practice assignments will receive a numerical grade following performance of the material in class.

**PRACTICE:**

A minimum of two hours a week of practice is essential especially as your skills develop and the challenges become greater. Schedule your practice time as though it were a class or lesson, set a goal for each practice session, and keep a record of how much you practice each week.

**PRACTICE JOURNAL:**

A practice journal will be maintained by the students. It is an important tool throughout this semester. Students will take class notes and journal their thoughts and practice times. The journal will be turned in on the day of the mid-term conference and before the week of Finals and evaluated by looking at its reflected dedication of the student, the content and completeness.

**QUIZZES:**

Two quizzes will be given. They will cover material presented in class and will be open book, open notes.

**MID-TERM CONFERENCE:**

During mid-term, students will meet with the instructor to drop off their Practice Journal, to play two of the pieces they are working on, and to discuss their progress or any concerns they might have.

**CULTURAL ARTS:**

Our campus is fortunate to offer the Cultural Arts Series where the community can attend performances of all genres. We are very fortunate to be able to attend one performance for free (at Marshal Middle School or Town Hall at CCC). After the performance, students will write a one page double-spaced paper about their experience and address their observations (For example: Summarize the performance VERY briefly. Then describe the atmosphere, the like or dislike of the performance and the reason for it). The paper will be evaluated by looking at the writing skills and the content. On the night of the performance, please go to the Cashier's window at Marshal Middle School or to the entrance of Town Hall at CCC. The clerks have your name on the roll and mark you off. Event program/ticket stub must be attached to the paper when turned in.

**WEEKLY PARTICIPATION:**

Every week, the instructor will evaluate how much the students' piano playing has progressed and observe the participation during piano exercises and practice.

## **COMPOSER PROJECT:**

Students will choose a composer to creatively present to the class.

Presentations can include slide shows, short videos, posters or other creative mediums and proper acknowledgement of all sources used.

## **FINAL PERFORMANCE:**

For the Final the class will have a concert where students play a **composition that they created (voluntarily) and two compositions from the book.**

## **ATTENDANCE AT THE MID-TERM AND FINAL:**

Students must participate in the **Mid-term** and **Final to pass this class!**

## **QUALIFIED STUDENTS WITH DISABILITIES:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

## **CASE MANAGEMENT SERVICES:**

If students need assistance with non-academic matters such as child care, transportation, or health care services, please contact the Center for Student Success, room 171 or call (575) 769-4747 for additional information.

## **COPYRIGHT:**

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**TECHNICAL SUPPORT:** CCC Help Desk(Room 119) support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the Canvas Student Orientation site if you need help navigating our online classroom. You may also find answers to common questions / problems on Canvas FAQs.

**Help Desk Hours:**

Monday-Thursday 7 a.m. to 7 p.m.

Friday 7 a.m. to 4:30 p.m.

Interim, Monday-Friday 7 a.m. to 4:30 p.m.

**This syllabus is a summary of this course and is *subject to change*.**

## COURSE SCHEDULE:

Jan 15	1	Syllabus, introductions, Intro to Piano, Music style periods
Jan 22	2	Ongoing piano instruction and practice, <b>Baroque</b> keyboard music, music theory and technique
Jan 29	3	Ongoing piano instruction and practice, <b>Classical</b> keyboard music, music theory and technique
Feb 5	4	Ongoing piano instruction and practice, music theory and technique
Feb 12	5	Ongoing piano instruction and practice, music theory and technique
Feb 19	6	Ongoing piano instruction and practice, <b>Composer presentations, Quiz #1</b>
Feb 26	7	Ongoing piano instruction and practice, <b>Composer presentations</b> , technique
Mar 5	8	<b>Midterm:</b> Class conference. For midterm, students will play 2 piano pieces they are working on, and turn in their practice journal.
Mar 12	9	Ongoing piano instruction and practice, <b>Romantic</b> keyboard music, music theory and technique
Mar 19	10	Ongoing piano instruction and practice, <b>Contemporary</b> keyboard music, music theory and technique

Mar 26	SPRING BREAK	
Apr 2	11	Ongoing piano instruction and practice, music theory and technique
Apr 9	12	Ongoing piano instruction and practice, <b>Quiz #2</b>
Apr 16	13	Ongoing piano instruction and practice, music theory and technique
Apr 23	14	Practice for Final, rough draft of composition due
Apr 30	15	Practice for Final/ <b>Art critique paper from concert due</b>
May 7	16	<b>Final:</b> Students will play 2 compositions from their book, and their own composition  Turn in practice journal





**Clovis Community College**  
**GENERAL CHEMISTRY II**  
**CHEM 1225C**

**INSTRUCTOR:** Dr. Lilly Robino  
**PHASE OFFICE:** Phase I  
**PHASE OFFICE PHONE:** 575-769-4911  
**EMAIL:** Please use the message system in Canvas  
**ALTERNATE EMAIL:** Please use the alternate email (lilly.robino@clovis.edu) for emergencies only

**TEXT:** Chemistry, 13th edition by Raymond Chang and Kenneth Goldsby, Connect Version. In this course, we will be using a digital version of the textbook (via McGraw Hill Connect). You are required to purchase access to Connect in this course. You can purchase Connect access via the CCC bookstore (Connect 1-semester access: ISBN 9781260161847). If you would like a hard copy of the textbook, you may purchase that separately (though it is not required) (Connect Loose Leaf (LL) with 1-semester access: ISBN 9781260264845).

### **MATERIALS REQUIRED**

**Lab Supplies:** This course consists of several at-home labs that can be completed with items commonly found at home (or can be easily purchased). A full list of the necessary lab supplies can be found in the Canvas classroom. Additionally, a **Camera** for taking photos of the labs will be required.  
Further information regarding the textbook and lab supplies are provided in the Canvas classroom.

### **INSTRUCTOR AVAILABILITY & CONTACT INFO**

Students should send all communication through our in-class Canvas message system. I normally check class mail several times a day, but please note that CCC's response policy for online faculty states "faculty will check and respond to all mail messages at least four times a week, Sunday through Saturday, with no more than 72 hours between checking the system."

In the event of an emergency, and you need a faster response, you may contact me directly at lilly.robino@clovis.edu.

### **COURSE DESCRIPTION**

This course is intended to serve as a continuation of general chemistry principles for students enrolled in science, engineering, and certain pre-professional programs. The course includes, but is not limited to a theoretical and quantitative coverage of solutions and their properties, kinetics, chemical equilibrium, acids and bases, entropy and free energy, electrochemistry, and nuclear chemistry. Additional topics may include (as time permits) organic, polymer, atmospheric, and biochemistry. The laboratory component is designed to complement the theory and concepts presented in lecture, and will introduce students to techniques for obtaining and analyzing experimental observations pertaining to chemistry using diverse methods and equipment.

Students must have successfully completed College Algebra (MTH 110) or its equivalent with a "C" or better in the past 5 years. Two years of high school algebra will meet this requirement (with a "C" or better in past 5 years). Students cannot take Chem 151 and Chem 152 concurrently without special permission.

### **COURSE OBJECTIVES**

By the end of this course, students should achieve at least 70% proficiency in the following lecture and laboratory learning outcomes:

#### **Lecture Student Learning Outcomes:**

1. Explain the intermolecular attractive forces that determine physical properties and phase transitions, and apply this knowledge to qualitatively evaluate these forces from structure and to predict the physical properties that result.
2. Calculate solution concentrations in various units, explain the effects of temperature, pressure and structure on solubility, and describe the colligative properties of solutions, and determine solution concentrations using colligative property values and vice versa.

3. Explain rates of reaction, rate laws, and half life, determine the rate, rate law and rate constant of a reaction and calculate concentration as a function of time and vice versa, as well as explain the collision model of reaction dynamics and derive a rate law from a reaction mechanism, evaluating the consistency of a mechanism of a given rate law.
4. Describe the dynamic nature of chemical equilibrium and its relation to reaction rates, and apply LeChatelier's Principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures as well as describe the equilibrium constant and use it to determine whether equilibrium has been established, and calculate equilibrium constants from equilibrium concentrations and vice versa.
5. Describe the different models of acids and base behavior and the molecular basis for acid strength, as well as apply equilibrium principles to aqueous solutions, including acid base and solubility reactions, and calculate pH and species concentrations in buffered and unbuffered solutions.
6. Explain titration curves and speciation diagrams, as well as calculate concentrations of reactants from the former and determine dominant species as a function of pH from the latter.
7. Explain and calculate the thermodynamic functions, enthalpy, entropy and Gibbs free energy, for a chemical system, and relate these functions to equilibrium constants and reaction spontaneity; balance redox equations, express them as two half reactions and evaluate the potential, free energy and equilibrium K for the reaction, as well as predict the spontaneous direction.
8. Construct a model of a galvanic or electrolytic cell; or describe organic reactions.
9. Describe bonding theories, such as valence and molecular orbital theory.

#### **Laboratory Student Learning Outcomes:**

1. Demonstrate and apply concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value with the correct units, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Prepare solutions with an acceptable accuracy to a known concentration using appropriate glassware.
5. Perform basic laboratory operations related to, but not limited to, gas behavior, colligative properties of solutions, calorimetry, chemical kinetics, chemical equilibria, acid/base titrations, electrochemistry, metal reactivity, and qualitative analyses of ions.
6. Draw conclusions based on data and analyses from laboratory experiments.
7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes, as required.
8. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
9. Design experimental procedures to study chemical phenomena.

#### **ONLINE COURSE GUIDELINES**

To see the latest guidelines for all online courses, please see the [Online Course Guidelines](#) document located within the Canvas course.

#### **TECHNOLOGY REQUIREMENTS**

Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please [click here](#) to see basic computer specifications for Canvas.

#### **SUBMITTING ASSIGNMENTS**

All assignments, quizzes and exams will be submitted via the online classroom and are due by **11:59 pm Mountain Time** on the date specified in the syllabus. Please make sure to adjust this to your local time zone and that you know what time it is at your house when it is 11:59 pm in Clovis, NM. Additionally I highly suggest that you back-up all of your work to a

cloud or thumb drive in case of technical failure or file corruption. Technical problems (including computer failure) are not valid grounds for late submission. In the unlikely event that CCC's website and/or Canvas are out-of-service, students should submit assignments via email to lilly.robino@clovis.edu (using proper attachments). However, once systems are restored, students must submit via the assignment folder. **Late items will not be accepted.**

### MAKE-UP WORK

Make up work is not available in this course, but the lowest lab, homework, exam scores will be dropped.

### ASSIGNMENTS: PERCENT OF COURSE GRADE

Grades will be based on the following:

- Lab Assignments 20%
- Discussions 10%
- LearnSmart Modules 5%
- Homework Problems 15%
- Lecture Exams 10%
- Lab Project 10%
- Midterm Exam 15%
- Final Exam 15%

### GRADING SCALE

Student final grades are based on overall performance in class

90 - 100%	= A
80 - 89%	= B
70 - 79%	= C
60 - 69%	= D
<60%	= F

Exams will be graded immediately upon their completion and the grade will be displayed in the grade book. The correct answers will be provided after the deadline for the exam has passed. The labs, discussions and homework will be graded within 7 days after the due date. No assignments will be graded until after the due date.

Each student will be allowed to drop their lowest lab assignment, LearnSmart module, homework, and exam score (with the exception of the midterm and final exams). This would include any assignment that was missed and earned a zero. Once dropped, these items will have no effect on your final grade.

### EXTRA CREDIT

There are two extra credit opportunities in the course – the midterm review and the final exam review. Completion of the review assignments will provide extra credit points that will be added to the midterm and final exams, respectively.

### LATE WORK

**Late assignments will not be accepted**, so please do not wait until the last minute to complete the assignments. Because unforeseeable circumstances occur, each student will be allowed to drop their lowest lab, quiz, exam, and homework assignment. This will allow each student to miss one of these assignments without being penalized. **Assignments must be completed before the deadline. If you know in advance that you will be unable to complete an assignment, it should be completed in advance. There are no exceptions to this rule, so don't ask!**

### PROJECT DESCRIPTIONS

**Laboratory Exercises:** A total of 13 laboratory assignments (1 pre-lab exercise, 11 lab exercises and a final lab project) will be assigned throughout the semester. These exercises are designed to give you the hands-on experience available to on-campus students. The majority of the lab assignments can be completed using materials found at home (or which can be easily purchased – a full list of lab supplies is provided in the Canvas classroom). You will also need a camera (digital is preferred) to take pictures of the lab activities. This documentation is required in order to receive credit for lab activities where photos are requested. The complete list of materials and the instructions will be listed under each lab assignment.

**Please be sure to read the assignment well in advance, to ensure that you have the proper materials.** Additionally, many of the lab exercises are time consuming, so please do not wait until the last minute to start the labs. The lowest lab score (not including the final lab project) will be dropped from the final grade. The rubric for the lab exercises can be found with each lab assignment.

**Discussions:** A total of 4 discussion questions will be assigned throughout the semester. The discussions consist of two parts: your initial discussion post and your responses to classmates. The rubric for the discussions can be found with each discussion topic.

**LearnSmart Modules:** The Connect platform utilizes interactive LearnSmart study modules when reading the textbook. The study modules include practice questions pertaining to the chapter material that test student understanding of the material. Completion of the study module questions for each chapter is required in this course. The lowest LearnSmart Module score will be dropped from the final grade.

**Homework:** A total of 12 homework problem sets (one per chapter, plus a chemistry review assignment) will be assigned during the course. All of the homework problem sets will be completed via Connect. The lowest problem set score will be dropped from the final grade.

**Exams:** A series of lecture exams will be assigned throughout the course. They are not proctored but are timed. An exam may only be taken once and it must be taken before the scheduled deadline. **Exams are NOT open book/notes - they are intended to be taken in the same way as any normal "on campus" exam in which your only resource is what you know. There will be no make-up exams allowed, so please do not ask.** This policy is discussed in the "Late Assignment" section. **Note: The tracking system will be checked for all students, and any student trying to access previous quizzes, assignments, exams or any other website while logged into any exam will result in a zero for that exam.**

**Midterm and Final Exams:** Each student is also required to take a **proctored** and timed (2 hour) midterm exam during Week 9 and a final exam during Week 16. The midterm and final **cannot** be dropped and must be taken during the scheduled time.

**If you live within 50 miles of Clovis Community College,** you may take the final exam here at CCC in our Testing Center or via ProctorU. If you choose to use the CCC Testing Center, I will turn in your names to the testing center before the exam. Once I submit your name (I will send you a mail message when I do), you will need to contact the testing center to schedule a time to take your exam during the midterm week and during the final exam week. Do not contact me to schedule your exam. If you choose to use ProctorU, please see below.

**If you live more than 50 miles from Clovis Community College,** then you can take your exam with an approved proctor or drive here to take it. If you want to take the final at CCC, please let me know and I will inform the testing center before the exam. If you do not plan to use CCC's testing center, then you will need to arrange to take your final exam with a suitable proctor - this means an official testing center or ProctorU. I know this can be inconvenient (or expensive), but it is a requirement for this course.

- If you choose to use a certified testing center, you and the proctor will need to fill out the approval form and upload it to the "Proctor Approval" assignment. Once I receive the proper proctor information, I will send your proctor information regarding the exam as the date as the draws near.
- If you choose to use ProctorU, you must let me know. You will then need to schedule an appointment with ProctorU (<http://www.proctoru.com/portal/clovis/>) - you do not need to submit a proctor form to me. More information about ProctorU can be found at the above website.

**THE PROCTOR SITE MUST BE APPROVED BY THE DEADLINES INDICATED ON THE SYLLABUS!**

## **QUALIFIED STUDENTS WITH DISABILITIES**

Clovis Community College offers all students an equal opportunity for education. Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (575-769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that your needs are appropriately met. Additional information can be found at <http://www.clovis.edu/advising/specialservices.aspx>

## **TECHNICAL SUPPORT**

Canvas/CCC Technical Support (Mon – Fri, 7 am - 7 pm)

- Click on "Submit a Help Desk Ticket" on Pathway
- Email: [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu)
- Phone: 575-769-4969
- Go to: "Click here to learn how to use Canvas" on the login page.

McGraw Hill Connect Support (Mon – Thurs, 24 hrs; Fri, 12 am – 9 pm ET; Sat, 10 am – 8 pm ET; Sun 12 pm – 12 am ET)

- Go to: <http://www.mheducation.com/contact.html#tech-support>
  - Click on "Online Help" under Higher Ed
- Phone: 800-331-5094

### **ACADEMIC DISHONESTY**

Academic dishonesty is an act by a student to use and/or represent the work of other individuals as that of their own production and/or creation. Academic dishonesty is unacceptable within the campus and in this course. Students committing acts of academic dishonesty shall be penalized by a failing grade on the assignment and/or the entire course, depending on the severity of the dishonest act. Please consult the college catalog for more information on the institutional policy on academic dishonesty.

### **NETIQUETTE**

Please see the "Online Course Guidelines" for the current policy. **Students may be administratively withdrawn for netiquette violations.**

**All assignments are due at 11:59 pm Mountain Time**

<b>Module</b>	<b>Assignments</b>
Module 1	Purchase Connect access and lab supplies Post an introduction Discussion 1 initial post Prep Gen Chem (review assignment) Pre-lab Exercise – How to Write a Methods Section
Module 2	Chapter 10 (sections 10.3-10.8) – Chemical Bonding II LearnSmart Module Chapter 10 Homework Discussion 1 responses Lab Exercise 1 – Valence Bond & Molecular Orbital Theory
Module 3	Chapter 11 – Intermolecular Forces and Liquids and Solids LearnSmart Module Chapter 11 Homework Lab Exercise 1 – Phase Changes
Module 4	Chapter 12 – Physical Properties of Solutions LearnSmart Module Chapter 12 Homework Lab Exercise 2 – The Naked Egg: Colligative Properties
Module 5	Chapter 13 – Chemical Kinetics LearnSmart Module Chapter 13 Homework Discussion 2 initial post Lecture Exam I (Chapters 10-12)
Module 6	Chapter 14 – Chemical Equilibrium LearnSmart Module Chapter 14 Homework Discussion 2 responses Lab Exercise 5 – Le Chatelier's Principle <b>***Proctor forms for the midterm due to the instructor***</b>
Module 7	Chapter 15 – Acids and Bases LearnSmart Module Chapter 15 Homework Lab Exercise 6 – Cabbage Chemistry
Module 8	Lecture Exam II (Chapters 13-15) Midterm Review (extra credit)
Module 9	<b>Midterm Exam (Chapters 10-15) – Proctor Required</b>
Module 10	Chapter 16 – Acid-Base Equilibria and Solubility Equilibria LearnSmart Module Chapter 16 Homework Discussion 3 initial post Lab Exercise 7 – Buffers
Module 11	Chapter 17 – Entropy, Free Energy, and Equilibrium LearnSmart Module Chapter 17 Homework Discussion 3 responses Lab Exercise 8 – Thermodynamics
Module 12	Chapter 18 – Electrochemistry LearnSmart Module Chapter 18 Homework Lab Exercise 9 – Lemon Battery

Module 13	Chapter 19 – Nuclear Chemistry LearnSmart Module Chapters 19 Homework Lab Exercise 10 – Half-Life Reactions Lecture Exam III (Chapters 16-18) <b>***Proctor forms for the final due to the instructor***</b>
Module 14	Chapter 20 –Chemistry in the Atmosphere LearnSmart Module Chapter 20 Homework Problems Discussion 4 initial post Lab Exercise 11 – Carbon Dioxide
Module 15	Final Lab Project Discussion 4 responses Lecture Exam IV (Chapters 19-20) Final Exam Review (extra credit)
Module 16	<b>Final Exam (Chapters 16-20) – Proctor Required</b>



# English 233/2210: Technical and Professional Communication I

Clovis Community College

Fall 2018, 3N0

## Instructor

Office Phone

E-Mail Canvas

## Office Hours

Monday 9:00-10:30 a.m.

Tuesday 3:00-4:00 p.m.

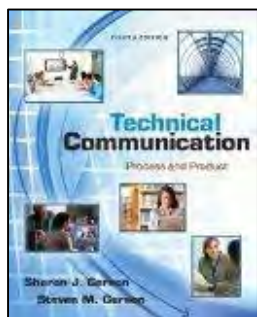
Wednesday 9:00-10:30 a.m.; 12:00-1:00 p.m.

Thursday 12:00-1:00 p.m.

The best way to get ahold of me is through Canvas email. I respond relatively quickly, but please give me up to 48 hours to respond. Sometimes I will check Canvas on the weekends, but that is inconsistent. If you send a message on Friday, please know I may not reply until Monday.

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## Required Course Text



Gerson and Gerson's (2014)

***Technical Communication: Process and Product***

8<sup>th</sup> edition. Upper Saddle River, NJ: Pearson.

ISBN-13: 978-0-321-86494-9

## Course Description

Professional and Technical Communication will introduce students to the different types of documents and correspondence that they will create in their professional careers. This course emphasizes the importance of audience, document design, and the use of technology in designing, developing, and delivering documents. This course will provide students with experience in professional correspondence and communicating technical information to a non-technical audience.

## Student Learning Outcomes

1. Choose professional communication appropriate for audiences and situations.
2. Write in different genres of professional communication.
3. Identify the purpose of a work-related communication and assess the audiences' informational needs and organizational constraints.
4. Employ appropriate design/visuals to support and enhance various texts.
5. Demonstrate effective collaboration and presentation skills.
6. Integrate research and information from credible sources into professional communication

## Instructor's Course Focus

English 233 is an introduction to the types of writing and analytical skills needed in professional jobs that require written communications. The course includes work with computer-mediated communication forms, technical descriptions, multimodal communications, and reports. Goals emphasized will be *language use, structure, organization, design, and documentation*. Editing will follow Standard American edited English. Basic skills in computing are assumed.

## Instructor's Goals for Students

Students will...

- Demonstrate an understanding of the basic components of technical descriptions, definitions, reports, and process explanations, and identify additional common concepts of technical writing to include audience, purpose, jargon, ethics, format, and visuals.
- Edit technical expressions for correctness, conciseness, accuracy, and clarity.
- Write technical communication documents such as the report and technical description with the accuracy of structure, organization, and style appropriate to accommodating purpose and audience.
- Use basic methods of research and documentation. Writers will synthesize and integrate material from sources with their own ideas in a research report.

## Course Quotation

"The creation of any meaningful text is hard work. One is not sure what one means until one has tried to mean it. Often a first reaction is to know that one has expressed a meaning but it is not yet what one means to say. The process of writing is always alerting us to the potential we have to make meaning and reminding us of its precarious nature."

– Andrew Goodman, *English in the Digital Age: Information and Communications Technology (ICT) and the Teaching of English*, 2000, p. 13.

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## Coursework

✓ 3 Papers	30%
✓ Discussions	20%
✓ Assignments	20%
✓ Quizzes	15%
✓ <u>Final Exam</u>	<u>15%</u>
Total:	100%



## ASSIGNMENT DESCRIPTIONS

**Papers** are the culminating writing projects of the modules and give students the opportunity to demonstrate their knowledge and understanding.

**Discussions** are considered our classroom activities and conversations. Students answer prompts, engage in research and written conversations, share and deepen ideas, and review writing.

**Note on the Discussions:** Students are expected to spend at least 2 or 3 days per week writing in the Discussions. The discussions are a chance for students to "talk" to each other about topics in the class and to practice technical writing in a less formal space. **Hint: Start the Discussion as soon as possible, at the beginning of a new module.** The discussion depends upon back and forth communication.

**Assignments** include what could be considered preparatory writings, writing in preparation for the larger projects.

**Quizzes** are for self-mastery of content and to test students' understanding of key concepts based on the content of the course. Students may take these quizzes twice. The quizzes have a 15 minute time limit. The instructor's intent is that students will read the chapters first, absorbing and studying the information, and then take the quiz

## Final Grade Configuration

Percent Scale	Point Scale
90-100% A	90-100 A
80-89% B	80-89 B
70-79% C	70-79 C
60-69% D	60-69 D
0-59% F	0-59 F

Percentages will be rounded up on the .5 or higher:

Examples: A 79.4 will not be rounded up, so it is a C and not a B.

A 79.5 will be rounded up to an 80%, and is a B.

**Please see the rubrics located in the course to see how assignments will be graded.**

## POLICIES -----

### OFFICE HOURS

My virtual office doors are always open to you. Please feel free to email me at any time to ask questions about assignments or the class, assignments, or college in general.

### CANVAS E-MAIL

Please use Canvas email to contact me. I am online at Canvas often and will reply relatively quickly. If emailing me on the weekends, please allow me until Monday to respond. **I respond to emails within 1 minute to 72 hours depending on when or what day the email was sent. If sending an email over the weekend, please allow a potential for extra time to respond.**

## ATTENDANCE

The Canvas system maintains a log of each time a student enters their online courses. Students are required to login at least three times a week in order to meet formal policy requirements. Please log in to get the most recent course assignment deadlines and to receive additional instructor announcements and emails. This way, you won't miss deadlines or important information.

## COURSE WORK POLICY

All course work must be completed in order to receive an acceptable grade in the class. Course work must meet minimum standards on par with English 233 (sophomore-level) expectations in order to receive passing grades.

## LATE WORK POLICY

❖ **Late work is not accepted, and a 0 grade will be given for work not turned in on time.**

A list of course work and due dates is easily available at Canvas, and the entire course with all readings and assignments is available for you to complete as you wish at your leisure. It is recommended that you go with the flow of the class but not required. However, Discussion replies may only be completed during the assignment period because they are written conversations between students.

**Common Situations:** If you know you have something coming up, like travel plans or a doctor's appointment, please go ahead and submit work early. A vacation or appointment (etc.) does not warrant excused assignments thus permission to submit work late will not be given. other course work can be submitted early.

**Emergency Situations:** Although late work is not accepted under common circumstances, if there's an emergency situation, please contact the instructor immediately. If you contact the instructor at least 24 hours before a due date, it might be possible to reschedule a deadline in emergency situations, but instructor approval is required in order to submit late work for credit.

## MAKE-UP WORK

Make-up work is not available for this course. If you miss an assignment, please pick up where you left off and begin to submit assignments again.

## CCC E-MAIL

All CCC students have a CCC email account. It is set up when students enroll. Campus-wide messages and important information go to your CCC email inbox. This instructor will contact you through Canvas email.

## SUBMITTING ASSIGNMENTS – New Mexico Time Zone

All assignments must be submitted to Canvas in the online classroom. Please note that online course submissions are automatically date and time stamped using New Mexico/Mountain Time zone). Assignments are due when it is 11:59 PM in Clovis, New Mexico.

## TECHNOLOGY REQUIREMENTS

It is recommended to use a computer that is 5 years old or newer if accessing the internet. (If writing papers, any will do!) We will be using Surface computers during class, so please bring a Jump Drive or use Google Drive or other Cloud storage to store writing/papers. More on this during class.

### Computer Labs:

There are several Computer Labs available for use on campus where you may write your papers, get online to do WWW research, log in to Canvas, etc. These include The Center for Student Success (open lab with good hours, Room 171); the CCC Walter D. Dabbs Library (across the street); the CCC Writing Center (in the Walter D. Dabbs Library); and The Tutoring Center (415A); Computer. If you are connected with TRIO, TRIO also has a wonderful computer lab.

## STARFISH

Clovis Community College uses **Starfish Early Alert** as a communication tool between students, faculty, and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at <http://www.clovis.edu/students/starfish.aspx>. If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

## TECHNICAL SUPPORT

CCC Help Desk support (Room 119) is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom. You may also find answers to common questions / problems on [Canvas FAQs](#).

### Help Desk Hours:

Monday – Thursday 7 a.m. – 6:00 p.m.

Interim: 7 a.m. - 5:00 p.m.

Fridays 7 a.m. – 4:30 p.m.

## WITHDRAW

If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class only after they have spoken with their instructor and academic advisor. **Instructors do not withdraw students**. Dual credit students must contact their high school counselor.

## ACADEMIC DISHONESTY, PLAGIARISM, CHEATING:

Academic dishonesty is a “misrepresentation of knowledge” and is subject to disciplinary action (see the *CCC Catalog*). Academic dishonesty includes *plagiarism* (a word that etymologically means “to kidnap”), which is

- 1) turning in written work that wasn't originally written by you
- 2) using someone else’s words or ideas (from a book, web site, email, magazine, etc.) in your own writing without giving proper, documented credit to the source of those words/ideas.

**Consequences of Plagiarizing:** If an assignment is *plagiarized*, the student will lose points, fail an assignment, **or** fail the course entirely. If you have questions about *plagiarism*, please ask.

## QUALIFIED STUDENTS WITH DISABILITIES:

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

## COPYRIGHT

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

## EMERGENCY ALERT

In case of campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. You may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

## Writing Assistance -----

### ONLINE TUTORING: BRAINFUSE.com



CCC has an online tutoring program through *Brainfuse*. If you live out of Clovis or do not have access to the CCC Writing Center, then *Brainfuse* might be perfect for you. *Brainfuse* offers free tutoring services in Math, English, Chemistry, Physics, Spanish, Statistics, and many other subjects. *Brainfuse* can be accessed through your Pathway portal.

## **ONSITE TUTORING: THE CCC WRITING CENTER**

The CCC Writing Center offers face-to-face tutoring at any point of the writing process and for any class writing project. Whether you are pondering the assignment, brainstorming, outlining, drafting, or revising, Writing Center tutors can help. **The Writing Center is located across the street from the main campus in the Library, next door to the Cybercafe.**

## **SAFEGUARDS**

Be sure to make back-up copies of all work and print hard copies in case your computer crashes; computers are not infallible. It is the student's responsibility to ensure that his/her computer is functioning properly and that all work is saved and available in duplicate. Technology problems or lost work are not the instructor's responsibility.

## **NETIQUETTE**

Netiquette is using good manners in cyberspace. Since most of the communication over the net is by way of written communication, be sure your written words are not offensive to the receiver. Remember that online communications are documents that are kept on file and can be read by others.

Whether a student is writing an email or posting to a discussion area, remember to use proper netiquette in consideration of others. If you would like to read more on the subject of netiquette, use the links:

<http://www.iwillfollow.com/email.htm>


















<http://www.albion.com/netiquette/corerules.html>

**Scroll down for a list of assignments for the semester.**


















## Schedule of Assignments and Due Dates

For full content (readings and assignment instructions) go to the Modules in the course.

Please be mindful of due dates.

Date	Details
Fri Aug 24, 2018	 <a href="#">CyberCafe: Introduce yourselves!</a>
Wed Aug 29, 2018	 <a href="#">Assessment Test/Pre - NOT proctored</a>  <a href="#">Check List</a>
Wed Sep 5, 2018	 <a href="#">M1 Discussion: What is Technical Communication?</a>  <a href="#">M1 Quiz -- Syllabus and Chapter 1</a>
Wed Sep 12, 2018	 <a href="#">M2 Discussion: The Process of Writing</a>  <a href="#">M2 Quiz -- Chapter 2</a>
Wed Sep 19, 2018	 <a href="#">Paper 1: Exposition of Your Technical Self</a>
Wed Sep 26, 2018	 <a href="#">M3 Assignment: Editing</a>  <a href="#">M3 Quiz -- Chapters 3 and 4</a>
Wed Oct 3, 2018	 <a href="#">M3 Discussion: "What makes a word real?"</a>
Wed Oct 10, 2018	 <a href="#">M4 Discussion, A question of Ethics</a>  <a href="#">M4 Quiz -- Chapter 5</a>
Wed Oct 17, 2018	 <a href="#">Key Word Search - EXTRA CREDIT</a>  <a href="#">M5 Part 1 Database Research for Two Sources</a>  <a href="#">M5 Part 1 Discussion, Topic</a>  <a href="#">M5 Part 1 Quiz on Ch. 6</a>



Wed Oct 10, 2018	<a href="#"> M4 Discussion, A question of Ethics</a> <a href="#"> M4 Quiz -- Chapter 5</a>
Wed Oct 17, 2018	<a href="#"> Key Word Search - EXTRA CREDIT</a> <a href="#"> M5 Part 1 Database Research for Two Sources</a> <a href="#"> M5 Part 1 Discussion, Topic</a> <a href="#"> M5 Part 1 Quiz on Ch. 6</a>
Wed Oct 24, 2018	<a href="#"> M5 Part 2 Assignment: APA In-text Citations Quiz</a> <a href="#"> M5 Part 2 Assignment: APA References Practice</a>
Wed Nov 7, 2018	<a href="#"> Paper 2: Research Report</a>
Wed Nov 14, 2018	<a href="#"> M6 Document Design: Which is best?</a> <a href="#"> M6: Multimodal Technical Communication</a>
Wed Nov 21, 2018	<a href="#"> M7 Quiz: Chapters 11 and 13</a>
Wed Nov 28, 2018	<a href="#"> Paper 3: Contrasting Technical Descriptions</a>
Fri Nov 30, 2018	<a href="#"> Assessment Test/Post -- NOT proctored</a> <a href="#"> Final Exam: Which Proctored Option?</a>
Wed Dec 5, 2018	<a href="#"> *** FINAL EXAM - SUBMIT HERE ***</a> <a href="#"> FINAL EXAM -- PROCTORED, please see instructions</a>

**Clovis Community  
College / Spanish II  
Spanish 1120 F2F**

**Spring, 2019  
(Syllabus subject to change)**

**INSTRUCTOR:  
OFFICE:  
OFFICE PHONE:  
MESSAGE PHONE:  
OFFICE HOURS:  
E-MAIL:**

**MATERIALS REQUIRED**

- Textbook *¡Arriba! Comunicación y Cultura*, sixth edition. (myspanishlab will NOT be used in this class) ISBN 0134020650.
- Pencil/pen and paper
- Spanish-English dictionary (optional)
- Index cards (required)

**COURSE DESCRIPTION**

In addition to being a continuation of Spanish 1110, this course is designed for students with some degree of exposure to Spanish, which aims to further develop basic listening, speaking, reading, and writing skills and basic intercultural competence in interpretive, interpersonal and presentational modes of communication based at the Novice High Level of proficiency based on ACTFL guidelines, although a few abilities may emerge in the Intermediate Low Level. Students in this course communicate in Spanish in familiar topics using a variety of words, phrases, simple sentences and questions that have been highly practiced and memorized.

**COURSE OBJECTIVES/ Student Learning Outcomes:** Upon completion of this course, students will have;

1. Students can participate in conversations on a number of familiar topics using simple sentences.
2. Students can handle short social interactions in everyday situations by asking and answering simple questions.
3. Students can present basic information on familiar topics using language they have practiced using phrases and simple sentences.
4. Students can write briefly about most familiar topics and present information using a series of simple sentences.
5. Students can understand the main idea in short, simple messages and presentations on familiar topics.
6. Students can understand the main idea of simple conversations that they overhear.
7. Students can understand the main idea of short and simple texts when the topic is familiar.
8. Learned the diversity of Hispanic culture.

**The standards for foreign language learning include:**

1. Communication – in a language other than English

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2. Culture – Gain knowledge and understanding of other cultures
3. Connections – Connect with other disciplines and acquire information
4. Comparisons – Develop insight into the nature of language and culture
5. Communities – Participate in multilingual communities at home and around the world

## ATTENDANCE REQUIREMENTS

Attendance is required at **all** sessions in each course. When circumstances make attendance impossible, students should notify the instructor of their absence. Students are responsible for making sure they are caught up with the class lectures and assignments, so they are able to attend the next class session prepared.

Being in attendance means that the student is present for the **entire** class period, every time the class meets throughout the **entire** semester. Seeing as this class only meets once a week, each absence has a huge **negative** impact on the student's grade. When circumstances make attendance impossible, you must contact the instructor via email well *before* class time in order to determine what the new assignments are so that you can stay on track. *However, in class/hands on activities missed cannot be made up. Students are responsible for all work assigned by the instructor.*

- The circumstances which may be excused are those due to serious medical reasons and for professional functions, which require the attendance of the student. In both cases, **proper documentation** evidence satisfactory to the instructor and to the Foreign Languages Department must be provided.
- Absences will not be excused at the end of the semester for non-attendance earlier in the semester even if belated proof is provided.

## TECHNOLOGY USE POLICY:

Cellular telephones are to be turned off in the classrooms. Cell phones and other digital devices can be used in class **ONLY** with instructor's permission and for class purposes. Social media for personal reasons is **NOT** allowed during class time.

Consult the college catalog for further information.

## WITHDRAW:

If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. **Instructors do not withdraw students.** Dual credit students must contact their high school counselor.

## STUDENT EMAIL

All students have an email account with CCC. Please make sure and email me with any issues or concerns you may have.

## CANVAS SHELL

All students have access to canvas, you will be required to submit a minimum of two assignments via canvas. You will also be able to view your grades and class progress on canvas.

## TECHNOLOGY REQUIREMENTS

Canvas is designed for maximum compatibility and minimal requirements. It is **recommended** to use a computer that is 5 years old or newer. Please keep in mind that computers are available for student use in the library. Canvas works best with Google Chrome.

## STARFISH

Clovis Community College uses **Starfish Early Alert** as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at <http://www.clovis.edu/students/starfish.aspx> . If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

### **MAKE-UP WORK:**

No late work will be accepted and a “0” will be given for work not turned in on time, unless prior contact and arrangements have been made with instructor about extenuating circumstances. Proper documentation must be provided. Please be aware of specific due dates. Please contact the instructor at least 24 hours before the due date so that alternative arrangement can be made.

For those of you that have no absences what so ever at the end of the semester, your lowest grade will be replaced to 100 percent.

### **GRADING POLICY:**

Grades in this course will be based on the following:

100 – 90 %	A
89 – 80%	B
79 – 70%	C
69 – 60%	D
59 – 0%	F

**ASSIGNMENTS: (70%)** All assignments, projects, participation in class, readings and communications with ESL individuals will fall into the assignment category.

**FINAL EXAM: (30%)** A comprehensive exam will be given at the end of the semester. Even if you have an “A” in the course the final is worth 30% and can bring your grade down considerably if not taken.

**GRADING SCALE:** Student final grades are based on overall performance in class.

**Homework:** Homework is seldom assigned, the majority of your assignments will be in class assignments and most cannot be made up therefore attendance is very important. Written work is expected to be **legible and completed on the due date before class ends**. **No late homework will be accepted.**

- **Class Participation, attendance, and class work:** Participation is an essential part of the class. This includes volunteering answers and questions in the classroom, and attendance. Points will be given for participation in target language, being prepared for class, class work, and being on time. **Points will be deducted for making no attempt to use target language**, not being prepared for class, and inappropriate or disruptive behavior. Simply showing up for class does not mean you will automatically receive participation points.

- **Grammar and vocabulary quizzes/tests:** These assessments will be written and based on vocabulary and grammar topics and will be given weekly. A comprehensive test maybe given at the end of each unit of the text and will be announced in advance so that students will have ample time to prepare.
- **Listening and speaking:** Listening assessment may include: dictations, storytelling, conversations, and music. Speaking assessments may include: reading, interviews, question and answer, skits or presentations. The speaking assessments will be graded on the appropriateness, complexity, and comprehensibility of their answers as well as their grammar and vocabulary usage and their pronunciation.
- **Reading and Writing:** Assessment for the writing grade may include: sentences, compositions, paragraphs and projects. Assessment for the reading grade may include: comprehension exercises, poetry, and magazines.

### **COURSE WORK POLICY:**

- Missed assignments will not be excused. All course work must be completed and submitted by the due dates to ensure receiving an acceptable grade in the class. Course assignments must meet minimum standards of college-level expectations in order to receive passing grades. A ‘ZERO’ can really hurt your grade.
- All assignments, quizzes and test must meet the specifications as stated in the assignment instructions.
- Any assignment not meeting the specifications will not receive full points and/or a zero.

### **LATE WORK/MAKE-UP WORK POLICY:**

No late work will be accepted and a “0” will be given for work not turned in on time, unless prior contact and arrangements have been made with instructor about extenuating circumstances. Proper documentation must be provided. Please be aware of specific due dates. Please contact the instructor at least 24 hours before the due date so that alternative arrangement can be made.

I want to ensure your success in this course. I am more than happy to assist you in any way I can, but I need to KNOW that you need help. Do not give up on the course, together we can find a solution. Feel free to email questions, call my office, or come by my office; I am here to help you in any way I can! I am always willing to meet for one on one tutoring sessions.

### **Written assignments/Projects:**

Assignments are due on their due date regardless of absence.

### **Quizzes/Tests:**

Students are required to take all quizzes/tests at the scheduled times. If you are unable to take an exam because of illness or an emergency, contact me **before** the scheduled exam. To receive credit, **all** make-ups must be taken **before** the next scheduled class. **Failure to schedule the make-up in a timely manner or a missed make-up will result in a 15 point grade reduction and/or a zero.**

### **EXTRA CREDIT:**

May be available depending on time schedule and availability options.

### **LATE WORK:**

Late work is not accepted unless prior arrangements are make. The missed assignment or replacement assignment is due no later than the beginning of the next class meeting time.

**QUALIFIED STUDENTS WITH DISABILITIES:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

**COPYRIGHT:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

**EMERGENCY ALERT:**

In case of campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

**ACADEMIC DISHONESTY:**

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the college catalog. Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor's evaluation of the severity of the dishonest act. Consult the [college catalog](#) for more information on the institutional policy on academic integrity.

**\*Note:** all work turned in should reflect the student's own words and abilities. **Use of translators** (people, mechanical or on-line) **is not allowed**, and is defined as plagiarism (claiming another's work as one's own), and will receive the same consequences as cheating.

**TECHNICAL SUPPORT:** CCC Help Desk support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4747. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom. You may also find answers to common questions / problems on [Canvas FAQs](#).

**Help Desk Hours:**

Monday-Thursday 7 a.m. to 7 p.m.

Friday 7 a.m. to 4:30 p.m.

Interim, Monday-Friday 7 a.m. to 4:30 p.m.

**COMPUTERS ON CAMPUS:**

Computers for student use are available on campus in the [Center for Student Success](#) (room 171). Please call 575.769.4095 for more information. The Center is open Monday-Thursday from 8 a.m. to 8 p.m. and 8 a.m. to 4:30 p.m. on Fridays. It is closed weekends and holidays.

The employees in the Center are there to assist students and faculty with computer functions such as power-up, keyboard operations, printer operations, and software problem determination. They are not expected, however, to instruct students or be a substitute for a faculty member. Any help from

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assistants should be considered a suggested solution and may be different from the solution expected by the instructor. When in doubt, **CONTACT YOUR INSTRUCTOR**.

### **Course Schedule/Calendar**

The schedule is subject to change depending on how far we advance from week to week:

Culture weeks will vary depending on schedule and when/if ESL class will join our class.

<b>Date</b>	<b>Week #</b>	<b>Assignment/Work Schedule</b>
January 14	1	Introductions. Review Syllabus. Review of Spanish 101. Visit Library, check out books. Vocabulary. Practice reading. Conversations. Writings.
January 21	XX	Martin Luther King, Jr. Holiday (no class)
January 28	2	Review. Practice reading conversation. Writings. Regular verbs. Vocabulary.
February 4	3	Review. Practice reading comprehension. Writings. Develop listening skills. Irregular verbs. Vocabulary.
February 11	4	Listening skills. Quiz?? Vocabulary. Practice reading and conversation comprehension. Writings. Verbs past tense. Verb Gustar.
February 18	5	Review. Reading, writing, conversation practice. Vocabulary. Short stories.
February 25	6	Review. Quiz?? Vocabulary. Practice reading conversation and comprehension. Begin Poem
March 4	7	Review. Vocabulary. Practice reading conversation and comprehension. Vocabulary. Writings. Listening skills
March 11	8	Midterm. Cultural activity. Reading/writing activity. Listening skills.
March 18	9	Review. Vocabulary. Practice reading conversation and comprehension. Writings. Verb Present Continuous. Listening skills
March 25	10	Spring Break
April 1	11	Review. Vocabulary. Object/subject pronouns. Practice reading conversation and comprehension. Writings. Listening skills. Kahoots.
April 8	12	Review. Quiz. Vocabulary. Practice reading conversation and comprehension. Listening skills. Writings.
April 15	13	Review. Vocabulary. Practice reading conversation and comprehension. Listening skills. Writings.
April 22	14	Create Piñata, Jeopardy exercises.
April 29	15	Cultural presentation and activities. Review. Practice reading conversation and comprehension. Writings.
May 6	16	Cultural presentations. FINAL EXAM!

\*Potluck for Culture Days will be announced as we go.

## SYLLABUS: BIOL 1110/1110L – GENERAL BIOLOGY WITH LAB

<b>Professor:</b>	Dr. Manda Clair Jost	<b>Lab Director:</b>	Eric Casler
<b>Office:</b>	Harlan Hall 110	<b>Office:</b>	Harlan Hall 124
<b>Phone:</b>	(575) 538-6640	<b>Phone:</b>	(575) 538-6642
<b>Email:</b>	jostm@wnmu.edu	<b>Email:</b>	Eric.Casler@wnmu.edu

**Dr. Jost's** By appointment, almost anytime!  
**office hours:** Walk-in office hours: MWF 10:00-11:00, and TuTh 11:00-noon

**Description and learning outcomes:** This course introduces nonscience majors to basic biological concepts including, but not limited to, the properties of life, biochemistry, cell biology, molecular biology, evolution, biodiversity, and ecology. It is an excellent introduction for students considering a degree or career in the Life Sciences, but this particular course does not count toward those degree plans. The laboratory component for non-science majors compliments the concepts covered in the associated general biology lecture course. Students will learn quantitative skills involved in scientific measurement and data analysis. Students will also perform experiments related to topics such as biochemistry, cell structure and function, molecular biology, evolution, taxonomic classification and phylogeny, biodiversity, and ecology.

**Recommended text:** *Biology, Life on Earth: With Physiology* (9<sup>th</sup> or 10<sup>th</sup> edition)  
by Audesirk & Byers

**Grading:** The same grade will be reported for both lecture (102) and lab (104), based on your combined performance in both courses. **You cannot receive different grades for lecture and lab. No extra credit is available.** Your course grades will be based on:

52%: Four scheduled exams, in class (each counts as 13% of final course grade)

30%: Laboratory section work, **including Lab Practical Exams (see syllabus)**

18%: Combined from lecture **attendance**, in-class quizzes, and occasional assignments.

No makeups will be given for in-class quizzes missed due to unexcused absences.

**Exam dates:** Exams will be given in-class on the following dates:

- Exam 1: (Lectures, readings, and concepts from lab) - Monday, September 11
- Exam 2: (Lectures, readings, and concepts from lab) - Monday, October 9
- Exam 3: (Lectures, readings, and concepts from lab) - Monday, November 6
- Exam 4: (Lectures, readings, and concepts from lab) - Wednesday, December 6



## BIOLOGY 1110/1110L SYLLABUS, PAGE 2 – COURSE SCHEDULE \*

Week	Lecture Topics	Suggested Readings	Laboratory exercise
Aug 14	Course introduction What is science? What is life?	Chapters 1 and 2	No labs
Aug 21	Why is water essential for life as we know it? What are “carbs”, lipids, nucleic acids, and proteins?	Chapter 3	Introduction to Lab: The Molecules of Life
Aug 28	How does Mendelian genetic inheritance work? What is a gene? What is an allele?	Chapter 10	Probability and Mendelian Genetics
Sept 4	What is DNA? What is RNA? What are amino acids? What are transcription and translation?	Chapters 11 and 12	DNA structure, transcription, & translation
Sept 11	<b>EXAM WEEK: Monday, September 11</b> What is evolution?	Chapter 14	Phylogeny and Evolution of Horses
Sept 18	What evidence exists for evolution? What is Natural Selection? What else causes evolution?	Chapter 15	Simulating Evolution in Populations
Sept 25	How do new species diverge from shared ancestors? Why <i>must</i> we understand evolution, to study Biology?	Chapter 16	Using Phylogenies to Study Biodiversity
Oct 2	What is the history of planet Earth? What is the history of life on Earth?	Chapter 17	<b>Midterm Practical Exam</b>
Oct 9	<b>EXAM WEEK: Monday, October 9</b> How are organisms classified into three “domains”?	Chapter 18	Single-celled Life Under the Microscope
Oct 16	What are phylogenies, and how are they useful? What are viruses, bacteria, archaea, and eukaryotes?	Chapters 19 and 4	Diversity, Anatomy, and Reproduction of Plants
Oct 23	How do prokaryotic and eukaryotic cells differ? What are plants? How do they live & reproduce?	Chapters 21, 43, & 44	Diversity, Anatomy, and Reproduction of Fungi
Oct 30	What are fungi? How do they live & reproduce? What are animals? How do they live & reproduce?	Chapters 22 and 23	Diversity, Anatomy, and Reproduction of Animals
Nov 6	<b>EXAM WEEK: Monday, November 6</b> What are some common and/or interesting animal phyla?	Chapter 24	Interpreting Animal Behavior
Nov 13	How did vertebrate animals evolve to live on the land? What is animal behavior, and how is it studied?	Chapter 25	Population Growth, and Predator/Prey dynamics
Nov 20	<b>Thanksgiving recess week – no classes</b>		
Nov 27	Why do animals behave the way they do? How do populations change over time?	Chapter 26	<b>Final Practical Exam</b>
Dec 4	How do different species live together in nature? <b>FINAL EXAM: Wednesday December 6</b>	Chapters 27 and 28	

This approximate schedule is only provided as a general outline, subject to change as necessary.

## BIOLOGY 1110/1110L SYLLABUS, PAGE 3 – COURSE & UNIVERSITY POLICIES

**Attendance:** It is not possible to succeed in this course without attending the lectures. If you miss three or more class meetings due to unexcused absence, **you can be dropped from the course without your knowledge or consent** unless you have discussed the problem with the instructor. To keep attendance up, there will be frequent in-class quizzes, sometimes more than once per week. **There are no makeups offered for in-class quizzes, which together with your attendance record will amount to 18% of your final grade in this course.**

**Make-up exams & labs:** You are expected to take the four examinations on the scheduled dates, and go to the laboratory section that you signed up for. **Makeup exams will only be given in the case of documented emergencies**, and only if the instructor is notified **before** the regularly scheduled exam takes place. Common ailments like colds, flu, headaches, hangovers, and fatigue are generally not sufficient reasons to miss an exam. Examinations missed due to illness must be documented with a physician's note, and the instructor notified **before** the scheduled examination takes place (not after). Very rarely, makeup examinations might be given in the event of personal or family emergencies, but only if the instructor is notified **before** the scheduled examination occurs. These policies are necessary to insure examination confidentiality, and the efficiency of grading. **In the unlikely event you are granted a makeup exam for an unexcused absence, 30% will be automatically deducted from your grade on that exam.** If a student misses any lab, the student is responsible for attending a make-up lab, following the policies of their laboratory class section. **All labs are due no later than 72 hours after you attended the lab exercise.**

**Cell phones:** While cell phones may occasionally be used for the calculator function or to conduct in-class surveys, **there is a zero-tolerance policy for personal cell phone use within the lecture hall or the laboratory.** This includes games, texting, and reading text messages. The professor will not remind you about this policy. **If you are seen using a cell phone during class for inappropriate reasons, you will be marked as an unexcused absence for that day** (see attendance policy, above) and your professor will not notify you of this penalty.

**Academic Integrity:** Each student shall observe standards of honesty and integrity in academic work as defined in the WNMU catalog. Violations of academic integrity include “any behavior that misrepresents or falsifies a student's knowledge, skills or ability with the goal of unjustified or illegitimate evaluation or gain”. Generally, violations of the academic integrity include cheating and plagiarism. Refer to the WNMU catalog for definitions. **Penalties for infractions of academic integrity in this class are as follows:**

- **Plagiarism:** “the intentional or unintentional representation of another's work as one's own without proper acknowledgement of the original author or creator of the work” (WNMU Faculty Handbook, 2008)

- **warnings and counseling on 1<sup>st</sup> offense; failure of both the course (102) and lab (104) on the 2<sup>nd</sup> offense.**

- **Cheating:** “using or attempting to use unauthorized materials...and unauthorized collaboration with others, copying the work of another or any action that presents the work of others to misrepresent the student's knowledge” (WNMU Faculty Handbook, 2008). **no warnings will be given. This course has a zero-tolerance policy on cheating. The penalty for cheating in this class is immediate failure of both the lecture (102) and lab (104) sections of the course on the first offense, and reporting of the incident to your academic advisor, and athletic coach if applicable.** Your professor, lab aides, and examination proctors are very experienced at detecting students who are cheating or copying assignments from others. We know all of your methods! Don't risk an F by trying!

## BIOLOGY 1110/1110L SYLLABUS, PAGE 4 – POLICIES (continued)

**Satisfactory academic progress:** It is **your** responsibility to stay caught-up in this course. Best practices include doing the readings ahead of time, taking notes on readings and lectures, asking questions, and visiting the instructor's office hours if you have unanswered questions. **If you score poorly on any exam, the instructor will request that you schedule a meeting with her to get help. You must schedule a meeting with the instructor if she requests that you do so, or else you will be dropped from the course for refusing to engage in your own education.**

**Inclement weather:** Refer to the OTA Student Handbook for notification procedures. In the event the University is closed during any examination for this class, the instructor may e-mail you with an announcement that your exam has been rescheduled. **If you do not receive an e-mail from your instructor, you should assume that the examination will be held as scheduled.**

**Disability Services at WNMU:** Services for students with disabilities are provided through the Academic Support Center's Disability Support Services Office in the Juan Chacon Building, Room 220. Some examples of the assistance provided are: audio materials for the blind or dyslexic, note takers, readers, campus guides, audio recorders, a quiet testing area, and undergraduate academic tutors (available to all WNMU students). In order to qualify for these services, documentation must be provided by certified health care professionals. Disability Support Services forms are available in the Academic Support Center. The Disability Support Services Office, in conjunction with the Academic Support Center, serves as Western New Mexico University's liaison for students with disabilities. The Academic Support Center's Disability Support Services Office can be contacted by phone at (575) 538-6400 or e-mail at [dss@wnmu.edu](mailto:dss@wnmu.edu).

**Communication Policy Statement regarding official email:** WNMU's policy requires that all official communication be sent via Mustang Express. As a result, all emails related to your enrollment at WNMU and class communication – including changes in assignments and grades – will be sent to your [wnmu.edu](mailto:wnmu.edu) email address. It is very important that you check your Mustang Express e-mail every day to check for correspondence from the University. **If you receive most of your email at a different address, you can forward your messages from Mustang Express to your other address. Example:** Say that Johnny Student was assigned a WNMU email address of [studentjohnny5@wnmu.edu](mailto:studentjohnny5@wnmu.edu), but Johnny would rather receive his emails at his home email address of [señorjohnny@yahoo.com](mailto:señorjohnny@yahoo.com). To do this, Johnny must follow the directions provided at: <http://www.wnmu.edu/campusdocs/direction%20for%20forwarding%20email.htm>

**WNMU Policy on email passwords:** WNMU requires that passwords for access to all of the protected software, programs, and applications will be robust, including complexity in the number of characters required, the combination of characters required, and the frequency in which passwords are required to be changed. Minimum complexity shall include: Passwords shall contain at least six (6) characters; Passwords shall contain at least one capital (upper case) letter, and at least one symbol (numbers and characters such as @ # \$ % & \*); and passwords shall be changed at least every 90 days.

**CLOVIS COMMUNITY COLLEGE (CCC)**

**English 202/2380—Introduction to Short Fiction  
Fall 2019 (3 credit hours)**

**INSTRUCTOR:**

**OFFICE HOURS:** By appointment.

**PHONE Number:**

**TEXTS:** *The Story and Its Writer*  
Ann Charters (B/StM) Ninth Edition  
ISBN-13 978-9-312-64511-3

**EMAIL:** Contact your instructor through the online classroom email (Canvas).  
An alternative address is :

**OFFICE HOURS with Zoom: On request.**

If you have to reach me, e-mail me.

**I will check my e-mail Monday until Friday at 12:00 P.M.**

A good way to reach me is by Canvas e-mail. [Please expect a response time of 12-48 hours, Monday until Friday at noon. To re-schedule a deadline, you must contact me at least 24 hours before a due date so we can reach a new agreement about a new deadline.](#)

**Also, major papers will be returned graded latest after two weeks. If you worry about your grade and have nightmares or anxieties, please contact me. =)**

**COURSE DESCRIPTION (per NM HED State competencies)**

This course is an introduction to the study of short fiction, focusing on the use of critical approaches to analyze the ways that narrative is created. Students will read and analyze a diverse range of texts that may include varying time periods, nationalities, regions, gender, and ethnicity.

## **MATERIALS REQUIRED:**

The ability to watch films chosen by your instructor is required for this class. The specified films are listed in the course schedule. The films are already set in Canvas; you only have to click on them and then are able to watch.



## **TECHNOLOGY REQUIREMENTS:**

Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please [click here](http://guides.instructure.com/m/67952/l/720328-what-are-the-basic-computerspecifications-forcanvas) <http://guides.instructure.com/m/67952/l/720328-what-are-the-basic-computerspecifications-forcanvas> to see basic computer specifications for Canvas. Please keep in mind that computers are available for student use in the library, Center for Student Success (Room 171)-laptops can be checked out for seven (7) days at a time, library, and computer lab.

## **STUDENT LEARNING OUTCOMES (Per NM HED State Competencies):**

Students will:

1. Read a selection of fictional work.
2. Identify literary devices of short fiction, such as plot, character, setting, point of view, and theme
3. Use critical approaches and engage in discussions to analyze fiction
4. Define the strength and limitations of short story fiction forms

## **STUDENT LEARNING OUTCOMES (CCC):**

After successfully completing this course students should be able to:

1. Analyze selected contemporary texts and contexts and the lives of the authors and look at the connection between them
2. Prepare and deliver polished and carefully edited examples of creative writing with the inclusion of the short story elements
3. Engage productively and respectfully with their peers

## **PARTICIPATION REQUIREMENTS:**

Timely participation is an important part of success in this class, like it is required for all classes in which the student is enrolled. You are required to be regularly logged in and completing work toward course objectives for you to be considered actively participating in a class. Simply logging in is not enough to count as “attendance.” Consult the CCC catalog for specific information regarding limits for absences. Students on Financial Aid and VA programs may have additional attendance requirements or restrictions. Check with the Financial Aid / VA Office for more information.

Strict rules of netiquette will also be followed. By remaining enrolled in the class, you agree to abide by all of the class policies. ***ALL WRITTEN work submitted for a grade (including essays) must be double-spaced, 12-point font, with one-inch margins unless otherwise specified. MLA/APA style is the default if questions arise.***

I want all of my students to succeed, and I am willing to work with you toward that goal. Therefore, if any special circumstances arise for you during the semester, please contact me. Depending on the situation, I might advise you to drop the class, or perhaps we can work things out. ***Communication is the key.***

## **SUBMISSION OF ASSIGNMENTS:**

You are responsible for getting and turning in all assignments on time. **I do NOT accept ANY late work and excuses!!!** This setup of Canvas makes no exceptions, and if you are late trying to post your assignment, it will not accept them. Furthermore, we move way too fast in this class for late assignments. Understand that the computer and I do not make exceptions. Please note that all online course messages and submissions are automatically date and time stamped using MST or MDT (Mountain Standard Time or Mountain Daylight Time). **DO NOT SEND THEM TO ME via email AFTER THE DEADLINE.**

**NOTE:** If you have technical difficulties uploading your assignment into the course drop box, send the project to me via the course email (janett.johnson@clovis.edu). Choosing to NOT wait till the last minute for the assignment to be completed will always serve you better, as most technical problems can be solved in a reasonable period of time.

**All assignments are always due at midnight!**

***A syllabus is akin to a contract, so if students choose to stay in this class, they agree to follow all policies and procedures addressed herein.***

### **PICTURE ID/TEST-TAKING:**

Clovis Community College requires that all students participate in a ProctorU exam. In this ENG 202 class, students are required to submit an ID with a picture before all assignments are opened. This releases the students of the responsibility to visit a Testing Center or go through ProctorU where they have to pay an additional test-taking fee. Our tests will not be proctored...They are all “open book.”

### **CCC E-MAIL:**

All CCC students have a CCC email account. It is set up when students enroll. Campus-wide messages and important information go to your CCC email inbox.

**ONLINE COURSE GUIDELINES:** To see the latest guidelines for all online courses, please see the “Online Course Guidelines” document located within your Canvas course.

### **EMERGENCY ALERT:**

Since our class is online, service interruptions are very unlikely. In case of an unscheduled outage, please submit homework via email to my email address (listed above). However, in case of campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

### **WITHDRAWAL FROM COURSE:**

Check the college schedule or catalog for further information regarding withdrawal from this and other classes.

**If you encounter problems throughout this semester, please do not “just” disappear from this online class. Instead, talk with me, your instructor, first to find out if we can salvage your difficulties.**

If we both come to the same consensus that it is better to withdraw, please withdraw yourself since **students will have to withdraw themselves from this class. The instructor is not permitted to withdraw students.**

### **ACADEMIC DISHONESTY:**

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the CCC Student handbook 2017-2018). Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by receiving a failing

grade on the assignment and/or for the entire course, depending on the instructor's evaluation of the severity of the dishonest act. Consult the CCC catalog for more information on the institutional policy on academic integrity.



### **NETIQUETTE:**

Netiquette is using good manners in cyberspace. Since most of our communication will be in text, be sure your words express the proper tone. Remember e-mail can be read by anyone. Making personal attacks or sending threats is unacceptable and will be reported per the guidelines up to and including administrative withdrawal from the course. Whether you are in a chat room, writing an e-mail or posting to a discussion area, remember to use proper netiquette and be considerate of others. If you would like to read more on the subject of netiquette, use the links below.

<http://www.iwillfollow.com/email.htm>

<http://www.albion.com/netiquette/corerules.html>

Rude, disrespectful, or verbally abusive messages will not be tolerated at any time under any circumstances. Sometimes we write email messages when we are upset and then hastily click "send." It is important to control that urge. Student Code of Conduct is on pg. 7 of the 2015-2017 CCC Catalog and in the student handbook. **Students may be administratively withdrawn for netiquette violations.**

### **QUALIFIED STUDENTS WITH DISABILITIES:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the [Special Services](#) Office (575-769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met.

In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.



## STARFISH:

Clovis Community College uses **Starfish Early Alert** as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails/texts and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at [www.clovis.edu/students/starfish.aspx](http://www.clovis.edu/students/starfish.aspx). If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).



## TUTOR AVAILABILITY:

**Brainfuse** is a free online tutoring service available 24/7 for all CCC students. Access **Brainfuse** through [Pathway](#) for a live, online session with a professional tutor.

If you live in Clovis, NM, you can also visit the Writing Center at Clovis Community College. They have an excellent staff of tutors available and are fun

to work with. You are also able to submit your papers electronically, and a tutor will help you revise your work. =)

To access “Brainfuse,” please follow those directions:

Get started with 4 easy steps:

\***Log on** to Pathway: [pathway.clovis.edu](http://pathway.clovis.edu)

\***Click on the** tab “Student Resources”

\* On top, right hand, you will find a box titled, “Brainfuse”

\***Click** the Brainfuse button

\***Click** the link in the channel to get connected with a tutor

### **COPYRIGHT:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

### **SAFEGUARDS:**

Back up all work on a disk and make a hard copy; computers are not infallible. It is the student’s responsibility to ensure that his/her computer is functioning properly.

### **TECHNICAL SUPPORT:**

CCC Help Desk support is available Mon – Thu 8:00-5:00 pm and Friday 8:00-4:30 p.m. at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating the online classroom. Please check on your Home page for this class for more details.

**Although unlikely, changes to the syllabus may occur at the discretion of the instructor.** Stay informed of changes by regularly emailing your instructor, or contacting classmates.

**Please always make sure that you check the Announcement link as soon as you log on. Here you will find information regarding changes, tests, assignments, and evaluations.**

**Be advised: This course will read and discuss stories with content meant for adults. If any course material is offensive or emotionally disturbing to you, please inform me, and you and I will try to develop an alternative activity or assignment.**

**MAY YOU ENJOY THIS CLASS WITH ITS MATERIALS AS MUCH AS I DO!  
Let us have a great learning experience with lots of fun! =)**

**GRADING POLICY:**

Your grade in English 202 will be based on:

Discussions 11 @ 15 pts= 165 points

Icebreaker 1 @ 20 points=20 points

Six essays on assigned topics @ 50 points each= 300

Oral Final: @ 215 points

One written midterm test, one written final test @150 points each=  
300 points

Total 1000 points possible 100%

The grading scale (a standard one) is as follows:

90-100% = A

80-89% = B

70-79% = C

60-69% = D

Below 60% = F

**Please be aware that the syllabus is subject to changes. I will announce those changes in the ANNOUNCEMENTS that will be posted each week. =)**

# REQUIRED SUMMER READING

THE CATCHER  
IN THE RYE



LORD OF  
THE FLIES



CAT'S  
CRADLE



THE SOUND  
AND THE FURY



ON THE  
ROAD



FAHRENHEIT  
451



GREAT  
EXPECTATIONS



THINGS  
FALL  
APART



THE  
SUN  
ALSO  
RISES



THE OLD MAN  
AND THE SEA



CRIME AND  
PUNISHMENT



A WRINKLE  
IN TIME



GRANT SNIDER

## **English 2380 – Schedule of Readings and Assignments**

**NOTE: All readings are from Charters, *The Story and Its Writer*, 9th edition, except as noted.**

Page numbers listed below refer to the first page of a reading or section in your text. **YOU ARE RESPONSIBLE FOR READING THE ENTIRE SELECTION IDENTIFIED. DISCUSSIONS, PROJECTS AND DUE DATES ARE LISTED IN CANVAS.**

### **Unit 1: *Studying Stories?***

#### **Reading:**

**Reading Short Stories:** 1667-1675

Appendix 2: Elements of short fiction 1676-91

Appendix 3: History of the Short Story 1692-1701

Atwood, 32: "Happy Endings"

Bradbury, 169 "There Will Come Soft Rains"

### **Unit 2: *The Short Fiction Tradition* Reading:**

Hawthorne, 578: "Young Goodman Brown";

Melville, "Blackness in Hawthorne's "Young Goodman Brown."" 1473

Melville, 886: "Bartleby the Scrivener"; Miller, commentary 1477

Poe, 1108 "The Cask of Amontillado";

1114, "The Fall of the House of Usher"

1127, "The Tell-Tale Heart"

The Importance of a Single Effect in a Prose Tale, 1509

Writing about Short Stories, 1702-1727

Literary Theory and Critical Perspectives, 1728-1735

### **Unit 3: *Intertextuality* Reading:**

Chekhov, "The Lady with the Little Dog", 271

Oates, "The Lady with the Pet Dog", 964

Nabokov, 1486; Ford, 1426

Conrad, 299-360; Achebe, 1385; Said, 1513

**Viewing:** *Apocalypse Now*

**MID-TERM EXAM—look in Canvas**

#### **Unit 4: Innovators and Subversives**

##### **Reading:**

Chopin, 284 "Desiree's Baby"; 288, "The Story of an Hour"

Perkins-Gilman, 533, "The Yellow Wallpaper"; 1578, "Why I wrote the Yellow Wallpaper"; Gilbert and Gubar, commentary 1581 Crane, 367 "The Open Boat"; commentary 1417; London, 850 "To Build a Fire," commentary 1467

##### **Unit 5: Beset with Modernity**

**Reading:** Lawrence, 787 "Odour,"; "Rocking Horse Winner," 801; Harris 1432; Fitzgerald 473

"Winter Dreams"; Hemingway, "Hills" 589; Ellison, "Battle" 418; commentary 1420; Faulkner, "A Rose for Emily" 454; commentary 1424 O'Connor, "Everything" 1005; "A Good Man" 1031; casebook 1589-1615

#### **Unit 6: It All Falls Apart—Late- and Post-modernism READING:**

Silko, "Yellow Woman" 1209; commentary 1516; Alexie, 14, "Lone Ranger and Tonto"; Mason, 867 "Shiloh"; O'Brien, "The Things They Carried" 990; comment 1494

#### **Final Exam—Look in Canvas**

**Have a wonderful semester, and enjoy all the readings! =)**







## Course Description

Introduction to Environmental Science presents an overview of Earth's environmental problems as a result of human interactions with the natural world and discusses possible solutions. The topics explored in this class include: environmental interrelationships, philosophical and economic issues, principles of ecology, sources and use of energy, impact of human activities on natural ecosystems, and the major types of pollution.

**Catalog Description:** GEOL 1122/1122L. Application of physical and biological principles to understanding the environment and environmental issues. Three lectures and one laboratory period per week.

**Textbook info::** Principles of Environmental Science, 8th edition; Cunningham and Cunningham  
ISBN-13: 978-1-259-66425-0



## Course Objectives

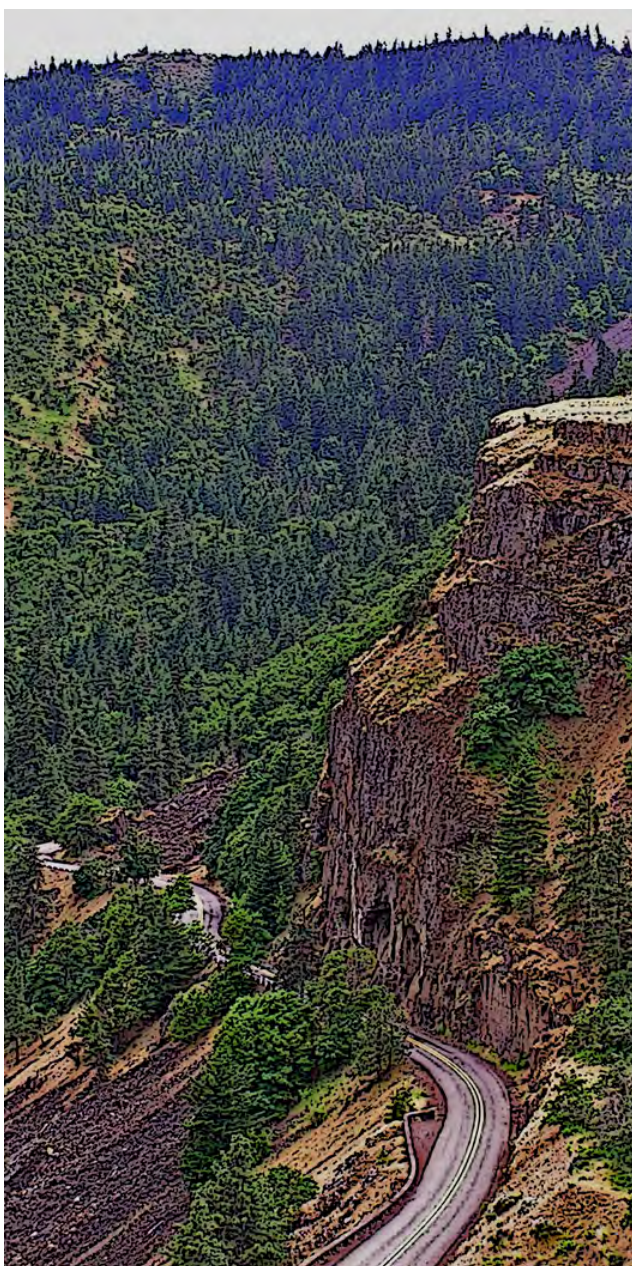
1. The student will increase their content knowledge about environmental science including Earth Systems and their interactions.
2. The student will develop an awareness of the processes that occur in the environment that may impact learners and some strategies for reducing impacts.
3. The student will be encouraged to become more scientifically literate by demonstrating the relevance and importance of geoscience.
4. The student will use proper descriptive, relational, and inferential data and be able to analyze it.
5. The student will develop and utilize skills of scientific inquiry, asking questions, gathering, analyzing, and interpreting data; drawing conclusions, predicting, and communicating results.
6. The student will communicate and defend their methodology and results using writing, graphical, and electronic forms in both the lessons and labs.
7. The student will demonstrate their ability to download and use electronic resources and digital software such as Google Earth, Excel, various browser plugins and animations to support learning.

## Assessment

Grades will be based on the following criteria and will be assigned using the scale:

1. A = 90- 100%
2. B = 80-89%
3. C = 70-79%
4. D = 60-69%
5. F = < 60%





## Student Learning Outcomes

1. The student will understand the step-by-step process of the scientific method; understand the relationship between environmental science as well as other social and scientific disciplines; and understand sustainability science as demonstrated by scoring 70% or more on a faculty prepared assignment.
2. The student will understand the chemistry, energy, of the environment; as well as the structure of the Earth's atmosphere and structure as demonstrated by scoring 70% or more on a faculty prepared assignment.
3. The student will identify issues related to popular perceptions about population biology, including mutations, unregulated population growth, and evolution in natural as demonstrated by scoring 70% or more on a faculty prepared assignment.
4. The student will understand human population growth as demonstrated by scoring 70% or more on a faculty prepared lab assignment.
5. The student will understand interactions among organisms that compete for shared resources as well as the concept of the "web of life" as demonstrated by scoring 70% or more on a faculty prepared lab assignment.
6. The student will describe fundamental ecosystem principles that are essential to the biogeochemical cycles of the Earth (Rock Cycle, Hydrologic Cycle, Carbon Cycle, Nitrogen Cycle, Phosphorus Cycle and Sulfur Cycle) as demonstrated by scoring 70% or more on a faculty prepared lab assignment.
7. The student will understand the Earth's biomes as demonstrated by scoring 70% or more on a faculty prepared lab assignment.
8. The student will understand biodiversity and the importance of conservation as demonstrated by scoring 70% or more on a faculty prepared lab assignment.
9. The student will understand the global water budget as demonstrated by scoring 70% or more on a faculty prepared lab assignment.
10. The student will understand the economic and environmental advantages and disadvantages associated with the use of electric power, coal, oil, natural gas, and nuclear power as demonstrated by scoring 70% or more on a faculty prepared lab assignment.
11. The student will understand the economic and environmental benefits and challenges associated with energy conservation and with the use of the major sources of renewable energy as demonstrated by scoring 70% or more on a faculty prepared lab assignment.
12. The student will be able to describe the kinds and sources of water pollution and the methods of water management.as demonstrated by scoring 70% or more on a faculty prepared lab assignment.
13. The student will design and execute a research project based on accepted standards in the field.

Procedures

1. Class work will be posted and should be accessed under the **Modules** tab. Each Module will include: an introduction to the topic, a reading assignment, a reading quiz, a written assignment, and a lab. Due dates are given on the schedule. **DO NOT MISS DUE DATES** - quizzes will become unavailable immediately after the due date, and late work will be penalized. **It is important to keep up.**
2. You should access each Module as soon as you can and note what needs to be done and plan your work accordingly. I recommend that you set up to receive notifications of any e-mail, messages, and discussion posting so you know what is happening in class. If you have any questions, please don't hesitate to ask.
3. You may submit work at any time before the due date and the earlier the better. It is not wise to wait until the last minute because 'technical difficulties' are not a valid excuse for missing a deadline.
4. If your work is submitted before 5 pm of the due date, I will make every effort to review your work and let you know if you need to revise it before it is officially graded. I will post a 0 for your grade and leave a comment as to what you are missing or have answered incorrectly.
5. I will typically visit the electronic classroom daily and will try to acknowledge all e-mails within 2-4 hours during the workweek until 5pm. I have my notifications set to send me your messages immediately so if I am working online, I will get back to you right away. Questions and messages posted after 5 pm or over the weekend may not be acknowledged until the following day.
6. Extra credit, if/when offered, is offered to the entire class, not to individuals and only if turned in by the due date.
7. For technical difficulties please contact either the Help Desk (see Policies section for more info) or Canvas via the Help link.
8. Do **NOT** submit work anywhere but the Assignment/Lab dropbox. If the dropbox is not accepting your upload, email me and let me know to reset the folder.
9. **NO** work will be accepted after the last day of class. The last day of class is the last day of instruction, not the last day of finals. NO work is accepted during finals.
10. I make every attempt to present this class free of errors, but they do happen. If you see an error (due date, quiz question, etc.) please email me and let me know so I can fix it ASAP.

Course Outline

Topic	Reading	Due
Module 1 Introduction to Class, Environmental Science and the Scientific Method	Assigned web links	No Quiz Assignment 1 due: Aug. 16 Lab 1 due: Aug. 18
Module 2 Introductions to Environmental Science and Environmental Systems	Chapters 1-2	Quiz 1 due: Aug. 21 Assignment 2 due: Aug. 23 Lab 2 due: Aug. 25
Module 3 Evolution, Species Interactions and Biological Communities	Chapter 3	Quiz 2 due: Aug. 28 Assignment 3 due: Aug. 30 Lab 3 due: Sept. 1
Module 4 Human Populations	Chapter 4	Quiz 3 due: Sept. 4 Assignment 4 due: Sept. 6 Lab 4 due: Sept. 8
Module 5 Biomes and Biodiversity	Chapters 5-6	Quiz 4 due: Sept. 11 Assignment 5 due: Sept. 13 Lab 5 due: Sept. 15
Module 6 Food and Agriculture	Chapter 7	Quiz 5 due: Sept. 18 Assignment 6 due: Sept. 20 Lab 6 due: Sept. 22
Module 7 Climate, Air and Air Pollution	Chapter 9-10	Quiz 6 due: Sept. 25 Assignment 7 due Sept. 27 Lab 7 due: Sept. 29



Module 8 Water: Resources and Pollution	Chapters 8, 11	Assignment 8 due Oct. 4 Lab 8 due: Oct. 6 Quiz 7 due: Oct. 9 Assignment 9 due: Oct. 11 Lab 9 due: Oct. 13 Assignment 10 due Oct. 18 Lab 10 due: Oct. 20
Module 9 Solid and Hazardous Waste	Chapter 14	Quiz 8 due: Oct. 23 Assignment 11 due: Oct. 25 Lab 11 due: Oct. 27
Module 10 Policy and Economics	Chapter 11	Quiz 9 due: Oct. 30 Assignment 12 due Nov. 1 Lab 12 due: Nov. 3 Assignment 13 due: Nov. 8 Lab 13 due: Nov. 10
Class Project		Nov. 15
Final Exam		Due: Dec. 6

Assessment and Grading Criteria

Assignments: 25%

1. A link to class assignments will be available under the Table of Contents for each **Module**.**The Assignments global navigation link shouldn't be used, it doesn't always list your work that is due in a timely manner and you will miss any comments posted on the Modules page concerning your work.**
2. The questions will relate to the textbook and weblinks provided.
3. The assignments are to be submitted via the same link.
4. You will be provided with an Answer Sheet in .doc/.docx format. Download it to your computer, fill in the answers, do a "Save" and upload it for grading. I especially appreciate it if your answers are in a different color than the text. It helps me when grading.
5. The assignments are to be submitted via the Assignment link for each Module.
6. A comment box is available in the Assignment dropdown where you may post any comments you want me to read concerning your work. I, too, will use the comment box to post any comments I may have on your work as I was grading it. Please return to read the comments, especially if you do not receive a grade for an assignment within a few days of the due date.
7. If you upload your work early (by 5 pm of the due date) I will look it over and notify you if you have any errors/mistakes. I will post a 0 for your grade and leave you a comment. You will have until the due date/time to revise and resubmit your work.
8. I prefer your work to be answered using your own words, not copied verbatim from the text, the internet, or a fellow student. Copying answers, especially if not referenced, is [plagiarism](#).
9. Assignments will be graded on a 10 point scale. The grade will be based both on content and on completeness of the response.

- |       |   |
|-------|---|
| 9-10: | The assignment is complete and correct. It shows insight and careful reflection on the topic. It is well written with complete sentences that respond to the questions. |
| 8-9:  | The assignment is essentially complete. The learner shows understanding of the topic although there are minor errors they are not conceptual in nature.                 |
| 7-8:  | The assignment is missing one or two answers or there are complete or there are errors in the work that reflect a misconception or lack of understanding.               |
| 6-7:  | The assignment is lacking more than one answer. Work is poorly done or displayed and does not demonstrate understanding of topics.                                      |
| < 6:  | Does not effectively address the assignment, major portions are missing.  |

1. Assignments are due at (mostly) Friday at midnight (Mountain Time). Assignments posted after the deadline will lose 1 point.
2. Assignments can be turned in late up until the availability date.





#### Labs: 25%

1. Labs will involve data-gathering and problem-solving. You may be asked to conduct experiments in your home, you may be asked to research a question, or analyze data from a web site.
2. Like Assignments, Labs should be submitted using the Answer Sheet.
3. Labs are due at (mainly) Monday at midnight (Mountain Time). Be sure to check the class Calendar for due dates. Labs posted after the deadline will lose 1 point.
4. Labs can be turned in up until the availability date.

#### Quizzes: 15%

1. The quizzes will be multiple choice and are designed to test your reading comprehension. You will have a single opportunity to take each quiz and will have an hour to complete the quiz. You may use your book.
2. The quizzes will become unavailable after the due date (Mondays at midnight) and if you miss the deadline you will not have an opportunity to complete the quiz.
3. Quizzes will be graded automatically after the deadline and grades will be posted in the grade book. After the quiz has been graded you can review the quiz results, including your answers, correct answers and comments by clicking on the Completed link in the attempts column on the quiz page.
4. One quiz grade will be dropped.

#### Daily Weather Report: 20%

1. You will be setting up a weather station in your own location and record data daily.
2. You will post once a week under Discussions the weather at your location. The report should include the time, temperature, wind, clouds, and precipitation. (12 weekly reports: 10%)
3. At the end of the semester you will prepare a summary of your weather data for the semester. The summary should be 1-2 pages in length and include a comparison to average trends for the area.

#### Group Activities: 5%

There will be 2 group activities through the semester. The grades will be assigned on a group basis.

Final Exam: 10%

The final exam in this course will be delivered on-line and will be a combination of multiple choice and short answer questions (similar to those in assignments). Time and details will be provided at least 10 days prior to the exam.

## WNMU Policies for Students

**Informed Consent:** Some individuals may choose to disclose personal information during class. Therefore, it is important that all classmates agree not to discuss or write about what others have discussed in class.

**Disability Statement:** Services for students with disabilities are provided through the Academic Support Center's Disability Services Office in the Juan Chacon Building, Room 220. Some examples of the assistance provided are: audio materials for the blind or dyslexic, note takers, readers, campus guides, audio recorders, a quiet testing area, and undergraduate academic tutors. In order to qualify for these services, documentation must be provided by qualified professionals on an annual basis. Disability Services forms are available in the Academic Support Center. The Disability Services Office, in conjunction with the Academic Support Center, serves as Western New Mexico University's liaison for students with disabilities. The Academic Support Center's Disability Services Office can be contacted by phone at 575-538-6400 or e-mail at [mattterr@wnmu.edu](mailto:mattterr@wnmu.edu)

**Military Statement:** If you are a military student with the potential of being called into military service and/or training during the course of the semester you are encouraged to contact the instructor regarding these matters.

**Professionalism :**Students are learning professional skills and are expected to engage in classroom discussions, complete reading assignments and turn in assignments in a timely fashion as befitting professional behavior.

**Scholarly Writing:** Use clear college level writing with correct spelling and grammar for all assignments. If you need help in writing, check with the WNMU Online Writing Center.

**Integrated Use of Technology:** Because this is an online course, I am making the assumption that you are comfortable utilizing a computer, and navigating various software programs like Microsoft Word, Powerpoint. If you have any questions about computer requirements see the *Student Resources* in Canvas.

leaves changing color

### Need Help?

1. Post a question to the Discussion Board. There is no such thing as a dumb question.
2. Post a question as a Canvas email to your instructor.
3. Click on the Help button in Canvas.
4. If the Canvas system goes down or you have other technical questions, contact the WNMU Help Desk: [helpdesk@wnmu.edu](mailto:helpdesk@wnmu.edu) or (575) 574-4357.
5. Go to the Canvas Student Resources page.

**Communication Policy Statement regarding official email:** WNMU's policy requires that all official communication be sent via Mustang Express. As a result, all emails related to your enrollment at WNMU and class communication--including changes in assignments and grades--will be sent to your [wnmu.edu](mailto:wnmu.edu) email address. It is very important that you access your Mustang Express e-mail periodically to check for correspondence from the University. If you receive most of your email at a different address you can forward your messages from Mustang Express to your other address (directions provided at: <http://www.wnmu.edu/campusdocs/direction%20for%20forwarding%20email.htm>)

**WNMU Policy on Email Passwords:** WNMU requires that passwords for access to all of the protected software, programs, and applications will be robust, including complexity in the number of characters required, the combination of characters required, and the frequency in which passwords are required to be changed. Minimum complexity shall include:

1. Passwords shall contain at least six (6) characters.
2. Passwords shall contain at least one capital (upper case) letter, and at least one symbol (numbers and characters such as @ # \$ % & \*).
3. Passwords shall be changed at least every 90 days. (8/6/08)

**Academic Integrity Policy and Procedures:** Each student shall observe standards of honesty and integrity in academic work completed at WNMU. Students may be penalized for violations of the Academic Integrity policy. Please refer to the Academic Integrity

**Caveats:** The schedule and procedures in this course are subject to change in the event of extenuating circumstances.

**Code of Civility:** In order to promote a positive, professional atmosphere among students, faculty and staff, the following Code of Civility has been developed:

1. **Respect:** Treat all students, faculty, staff and property with respect and in a courteous and professional manner. This includes all communications, whether verbal or written. Let your actions reflect pride in yourself, your university, and your profession.
2. **Kindness:** A kind word and gentle voice go a long way. Refrain from using profanity, insulting slang remarks, or making disparaging comments. Consider another person's feelings. Be nice.
3. **Truth:** Exhibit honesty and integrity in your dealings with fellow students, faculty and staff members. Don't lie, don't cheat, and don't steal.  
**Responsibility:** Take responsibility for your actions. This includes gracefully accepting the consequences of your behavior.
4. **Cooperation:** Exhibit a cooperative manner when dealing with students, faculty and staff so we may all work towards our common goals and mission.
5. **Acceptance:** Accept differences in others, as they accept differences in you. This includes diversity in opinions, beliefs and ideas and everything else that makes us unique individuals.
6. **Professionalism:** Always conduct yourself in a manner that will bring pride to your profession, to Western New Mexico University, and, most importantly, to yourself.

2016 Vicki Harder

## Geology 1110/1110L: Physical Geology & Laboratory

### Contact Information

**Instructor:** Dr. Corrie Neighbors

**E-mail:** corrie.neighbors@wnmu.edu

**Office:** Harlan Hall 122

**Phone:** 575-538-6352

**Office Hours:** Tuesdays 2 – 5 PM and by appointment



### Course Description & Objectives

**Overview:** This course concerns the study of Earth materials and processes and their effects on mankind; While geology is generally the study of the Earth, this course is about the processes that shape the Earth and affect society. Laboratory periods frequently used for field trips; three lectures and one laboratory per week.

**Outcomes:** There are five main themes for the course that will be woven through all of the topics in the course:

- Scientific methods are used to study the Earth.
- The Earth is a complex system with many interactions.
- The Earth is dynamic and always changing.
- Geologic hazards often put society at risk.
- The Earth is the source of most of the materials needed to support society.

**Objectives for Laboratory:** This course meets the NM General Education Curriculum

1. Use physical properties to identify mineral specimens.
2. Describe, classify, and identify igneous, sedimentary, and metamorphic rocks and their textures.
3. Utilize the principles of stratigraphy to provide an explanation of the geologic history portrayed in a photograph or cross-section.
4. Explain how contour lines are used to represent topography, use map scales to measure distances on the ground, and construct topographic profiles.
5. Identify landforms from images and topographic maps.
7. Acquire and communicate scientific data, ideas, and interpretations through written, oral, or visual means. Examples may include creating and describing graphs, maps and photos.
8. Apply critical thinking skills such as inductive, deductive, and mathematical reasoning to solve geological problems.

**Objectives:** This course meets the NM General Education Curriculum

1. Recall, describe or explain geologic vocabulary.
3. Recognize or explain the evidence used to support the theory of plate tectonics. Describe or identify how plate tectonics is related to the structure and features of the Earth.
4. Describe the formation of, and describe, compare, and classify minerals.
5. Identify or describe the three main rock types, how each forms in the context of the rock cycle and what each indicates about its environment of formation.
6. Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.
7. Describe or discuss the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
8. Recognize or describe the geologic processes involved in the formation and concentration of geologic resources.

## **Course Materials**

An integral part of the class is the Canvas course site, which will be updated throughout the term with course materials. You are encouraged to take advantage of these resources plus any additional other resources to get the most out of this course. Please share any and all resources that you find valuable on our online *Piazza* forum to enrich the learning of others as well.

**Text:** **GEOL 2** by Reed Wicander and James S. Monroe, (published by Brooks-Cole/Cengage Learning in 2011, ISBN: 1-133-10689-6) is the text for the course. This textbook was selected for the range of topics, the clear writing and the illustrations. *Note:* The first edition of the book, GEOL, (ISBN: 0-538-49453-0) was used previously and is adequate for this class. The page numbers may vary slightly.

**Format:** This class will emphasize team-based and active learning. Short lectures will be interspersed with team and individual activities. Teams will work together on some class activities and quizzes and exams will be partly based on individual effort and partly on team effort. It is critical that you come to class prepared to learn, by doing homework and reading as assigned.

**Technical Support:** There is web support for this class in Canvas. Direct questions about lab & email access, WNMU student accounts, and technical to the Help Desk.

## **Communication**

To ensure questions are answered in a timely manner and benefit all students, the following communication protocols for the course have been established:

- Consult the syllabus and course calendar for answers to common questions.
- Questions related to grades or other sensitive matters should be discussed privately in office hours or over email.
  - *Email:*
    - The subject line of ALL emails directed to the Instructor should include 'GEO101'. During the weekdays, please allow up to 24 hours for a response from the Instructor; however, you are likely to receive a response within 6 hours.
    - Remember this is a professional environment; craft an appropriate, considerate email. Emails with suitable etiquette (salutation, grammatically correct body, and closing) will be answered promptly during business hours.
  - *Office hours:*
    - The Instructor is available to meet online during regularly scheduled office hours or by appointment. The schedule of office hours is appended and also appears on Canvas.
    - Note that detailed explanations are not possible via email. Office hours are available for assistance. If you cannot make office hours, email a request for additional time to meet with the Instructor.
- **Attendance:** Attendance is not mandatory, but studies have shown that the class attendance is the best predictor for success. Late or make-up work is not accepted; if an absence is unavoidable please inform the instructor beforehand. If you miss a class it is your responsibility to find out what occurred in class.

## **Criteria for Evaluation**

Each student is responsible for the following:

- Completely reading the syllabus and understanding course requirements;
- Staying informed and up-to-date on all course-related work each and every week;



- Attending weekly lecture and lab meetings and completing all coursework by the assigned deadlines;
- Being active on the Canvas course site by checking email regularly and reading announcements.

**Homework** (10% of final grade)

There will be homework assignments on a weekly basis. Students are encouraged to work collaboratively but complete their own work for submission. Each assignment will be assigned a point value at the time of assignment. No late work accepted, no emailed work accepted, and no make-up work will be accepted. Students must turn in hardcopy of completed homework on or prior to the due date.

**Lecture Activities** (20% of final grade)

There will be class activities in each lecture. Students must be present in lecture to receive credit on these activities. Students are encouraged to work collaboratively but complete their own work for submission. NO MAKE-UP activities will be accepted without written valid excuse presented prior to the lecture in question.

**Lab Activities** (35% of final grade)

Laboratory exercises are designed to encourage students to explore geologic questions, ask questions, and work in a scientific manner. The labs are hands-on, collaborative and cooperative. Labs for the course were written by the instructor and emphasize connections to local geology. There will be assignments given in each lab. Students must be present in lab to receive credit and these assignments are due at the end of the lab period. Students are encouraged to work collaboratively but complete their own work for submission. Each assignment will be assigned a point value at the time of assignment.

**Exams** (35% of final grade)

There will be 3 exams and a final (4 exams total). Exams will consist of multiple choice, short answer and short essay questions and interpretation of graphs and diagrams. The final exam is cumulative. I plan to base your grades on the following scale, although minor adjustments may be made.

A: 90 - 100%      B: 80 – 89%      C: 70 – 79%      D: 60 – 69%      F: Less than 60%

**Course Schedule**

The course schedule is appended to the syllabus as well as posted in Canvas. The schedule contains an approximate guideline of the topics we will cover each week.

**Class Policies**

**Makeup:** In general, make-up work will not be allowed. Makeup field trips will not be run. No make-up work will be accepted after the due date without prior notice. Extensions are granted only under the most pressing of circumstances and must be pre-arranged with the Instructor. If you have a planned absence, the assignment should be turned in prior to the due date. If you have an emergency, please notify the Instructor **before** the class or lab and provide the appropriate official note explaining your absence.

Any approved make-up work must be submitted at the beginning of the next class meeting and absolutely prior to the exam covering the make-up work topic (e.g., plate tectonics homework must be submitted before the first exam which contains questions concerning plate tectonics). If you miss a class or lab due to an official University sporting event, you will need to submit the missed assignment at the beginning of the next class meeting with a note from the coaching staff.

**Academic Integrity Policy and Procedures:** Each student shall observe standards of honesty and integrity in academic work as defined in the WNMU catalog. Violations of academic integrity include “any behavior that misrepresents or falsifies a student’s knowledge, skills or ability with the goal of unjustified or illegitimate evaluation or gain” (WNMU Faculty Handbook, 2008). Generally violations of the academic integrity include cheating and plagiarism. Penalties for infractions of academic integrity in this class are as follows:

**Plagiarism:** “the intentional or unintentional representation of another’s work as one’s own without proper acknowledgement of the original author or creator of the work” (WNMU Faculty Handbook, 2008).

**Cheating:** “using or attempting to use unauthorized materials...and unauthorized collaboration with others, copying the work of another or any action that presents the work of others to misrepresent the student’s knowledge” (WNMU Faculty Handbook, 2008).

Students will receive a warning and half credit on the assignment for the first incidence of plagiarism or cheating. They will receive no credit on the assignment for the second incidence. If they are found guilty of plagiarism or cheating a third time they will fail the course.

### **WNMU Policies**

**Disability Support Services:** Services for students with disabilities are provided through the Student Health Center’s Disability Support Services Office. Some examples of the assistance provided are: audio materials for the blind or dyslexic, note takers, readers, campus guides, audio recorders, and a quiet testing area. In order to qualify for these services, documentation must be provided by certified health care professionals. Disability Support Services forms are available in the First Year Experience Office and in the Student Health Services Office. The Disability Support Services Office serves as Western New Mexico University’s liaison for students with disabilities. The Disability Support Services Office can be contacted by phone at (575) 538-6400 or e-mail at [dss@wnmu.edu](mailto:dss@wnmu.edu).

COURSE: Physical Geology  
GEOL 1110/11110L  
CRN: 22221  
Lab CRN: 22222 & 22223

# JANUARY 2019

**KEY**  
L: Lectures  
L: Labs  
**EXAMS**

*Notifications, Holidays, etc.*

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
	<i>Semester Begins</i>					
13	L1 – Intro to Course, Scientific Method; Ch. 1 Lab 01 –Scientific Method <i>Instruction Begins</i>	15	16	17	18	19
Week 1			L2 – Spheres of the Earth; Ch. 1		L3 – Introduction to Maps; Map Reading H1 Spheres of the Earth <i>Last Day to Add/Drop</i>	
20	21	22	23	24	25	26
Week 2	<i>CAMPUS CLOSED - Holiday</i>		L4 –Topographic Maps		L5 – Reading Terrain & Slope H2 Map Reading	
27	28	29	30	31		
Week 3	L6 – Interior of the Earth; Ch. 1, Ch. 2 Lab 02 – Map Reading		L7 – Intro to Plate Tectonics; Ch. 1, Ch. 2		L8 – Theory of Plate Tectonics; Ch. 1, Ch. 2 H3 Plate Tectonics	

**Notes:** \_\_\_\_\_

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*\*tentative schedule; subject to change*

COURSE: Physical Geology

GEOL 1110/11110L

CRN: 22221

Lab CRN: 22222 &amp; 22223

## FEBRUARY 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 3	<b>L6</b> – Interior of the Earth; <i>Ch. 1, Ch. 2</i> <b>Lab 02 – Map Reading</b>		<b>L7</b> – Intro to Plate Tectonics; <i>Ch. 1, Ch. 2</i>		<b>L8</b> – Theory of Plate Tectonics; <i>Ch. 1, Ch. 2</i> <i>H3 Plate Tectonics</i>	
Week 4	<b>L9</b> – Plate Boundaries; <i>Ch. 1, Ch. 2</i> <b>Lab 03 – Plate Tectonics; Ch. 2</b>		<b>L10</b> – EQ Source; <i>Ch. 8</i>		<b>L11</b> – EQ Seismic Waves; <i>Ch. 8</i> <i>H4 Earthquakes</i>	
Week 5	<b>L12</b> – Earthquake Damage & Disaster; <i>Ch. 8</i> <b>Lab 04 – Earthquakes &amp; Faults; Ch. 2, Ch. 8</b>		<b>L13</b> – Exam Review		<b>EXAM 1</b>	
Week 6	<b>L14</b> – Introduction to the Rock Cycle; <i>Ch. 1</i> <b>Lab 05 – Minerals; Ch. 3</b>		<b>L15</b> – Minerals; <i>Ch. 3</i>		<b>L16</b> – Igneous rocks: Magma & Crystallization; <i>Ch. 4</i> <i>H5 Minerals &amp; Rocks</i>	
Week 7	<b>L17</b> – Volcano Hazards; <i>Ch. 5</i> <b>Lab 06 – Computer Lab: Volcanoes</b>		<b>L18</b> – Types of Volcanoes; <i>Ch. 5</i>		<b>L19</b> – Types of Volcanoes; <i>Ch. 5</i> <i>H6 Volcanoes &amp; Igneous Rocks</i>	

\*tentative schedule; subject to change

**Notes:** \_\_\_\_\_

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COURSE: Physical Geology  
GEOL 1110/11110L  
CRN: 22221  
Lab CRN: 22222 & 22223

# MARCH 2019

**KEY**  
L: Lectures  
L: Labs  
**EXAMS**

Notifications, Holidays, etc.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 7	L17 – Volcano Hazards; Ch. 5 Lab 06 – Computer Lab: Volcanoes		L18– Types of Volcanoes; Ch. 5		L19 – Types of Volcanoes; Ch. 5 H6 Volcanoes & Igneous Rocks	
Week 8	L20 – Weathering & Sediment; Ch. 6 Lab 07 – Field Trip: Silver City Rocks		L21 – Sedimentary rocks; Ch. 6	Mid-Grades Due	L22 – Stratigraphy; Ch. 6 H7 Sedimentary Rocks	
Week 9	NO CLASSES; Spring Break					
Week 10	L23 – Metamorphism; Ch. 6 Lab 08 – Rocks		L24 – Exam Review		EXAM 2	
Week 11	L25 – Surface Processes; Ch. 11 Lab 09 – Mass Wasting		L26 – Factors influencing mass movements (landslides)		L27 – Types of mass movements; Ch. 11 H9 Mass Movements	
Week 12	L28 – Mass wasting mitigation; Ch. 11 Lab 10 –Field Trip: Slope Stability		L29 – Properties of Streams; Ch. 11		L30 – Streams & Floods; Ch. 11 H10 Rivers & Floods	

Notes: \_\_\_\_\_

\*tentative schedule; subject to change

COURSE: Physical Geology  
GEOL 1110/11110L  
CRN: 22221  
Lab CRN: 22222 & 22223

# APRIL 2019

**KEY**  
L: Lectures  
L: Labs  
**EXAMS**

Notifications, Holidays, etc.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 12	1 L28 – Mass wasting mitigation; Ch. 11 Lab 9 – Field Trip: Slope Stability	2	3 L29 – Properties of Streams; Ch. 11	4	5 L30 – Streams & Floods; Ch. 11 Last Day to Withdraw H10 Rivers & Floods	6
Week 13	7 L31 – Flood Damage & Preparedness; Ch. 11 Lab 10 – Field Trip: Streams	8	9	10	11	12 L33 – Groundwater Resources; Ch. 12 H11 Groundwater
Week 14	14 L34 – Exam Review Lab 11 – Porosity & Permeability	15	16	17 EXAM 3	18	19 CAMPUS CLOSED - Holiday
Week 15	21 L35 – Waves & Coasts; Ch. 15 Lab 12 – Computer Lab: Coastal Properties	22	23	24 L36 – Coastal Processes; Ch. 15	25	26 L37 – Coastal Armoring; Ch. 15 H12 Coastal Processes
Week 16	28 L38 – Tsunami Lab 13 – Exam Review	29	30	L39 – Wildfires	L40 – Exam Review	

\*tentative schedule; subject to change

Notes: \_\_\_\_\_

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COURSE: Physical Geology  
GEOL 1110/11110L  
CRN: 22221  
Lab CRN: 22222 & 22223

# MAY 2019

**KEY**  
L: Lectures  
L: Labs  
**EXAMS**

*Notifications, Holidays, etc.*

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
Week 16	L38 – Tsunami	Research Symposium	L39 – Wildfires		L40 – Exam Review	
	Lab 13 – Exam Review				Last day of class	
Week 17	5	6	7	8	9	10
	← Finals Week →					11
	FINAL EXAM 12:30 PM				Commencement	
12	13	14	15	16	17	18
	Grades Due					
19	20	21	22	23	24	25
26	27	28	29	30	31	
	CAMPUS CLOSED - Holiday					

*\*tentative schedule; subject to change*

Notes: \_\_\_\_\_

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## **Grading Rubric for Behavior Self-Change Paper**

The purpose of this paper is to allow you to carry out a self-management project using the principles of learning.

Your paper should be organized using the following format.

Title Page – 5 points

### **I. Description of Behavior – 15 points**

Describe completely the behavior that you plan to change. Be specific, quantify the behavior and express it in terms of increasing or decreasing your behavior.

Along with your description of the behavior include how long you have had (or not had) the behavior, indicate the duration, origin, frequency, etc.

Describe any prior attempts to change the behavior as well as why you feel you were not successful.

### **II. Baseline Data – 20 points**

Describe the specific situations that affected your behavior during the 7-day self-observation.

Make sure to include the specific triggers related to your behavior. (When did it happen? Who were you with? What were you doing? Where were you? What were you saying to yourself?) What patterns did you find?

\*\*\*Include the journal (written record of your behaviors during this self-observation) at the end of this paper as Appendix A.

### **III. Design/Strategy for change – 25 points**

Specifically explain your overall plan/program for changing your behavior.

Explain how you changed the events controlling your behavior.

Describe use of shaping, reinforcements, punishments, and social support. Make sure to make specific references to concepts of operant conditioning. Be sure to demonstrate your ability to apply the concepts you learned in class and textbook.

Describe how you ended your program.

\*\*\*Include your behavioral contract with corrections.

\*\*\*Include the journal (written record of your change program).



## Rubric for Behavior Modification Paper

### **IV. Discussion – 20 points**

Reflect on the effectiveness of your program. How well did it work?

Why was it effective or ineffective?

Were there any problems that you had not anticipated?

Implications for the future – what do you think you might change or do differently at this point?

Comment on continuing the behavior beyond the classroom experience.

Would you be able to use these principles of learning to change a different behavior at a later date?

### **V. Structure, Grammar, and Spelling – 20 points**

Well-structured, well-organized paragraphs with appropriate, clear, and smooth transitions; uses professional standards of written English

Proofread your papers for grammar and spelling.

This 5-7 page paper must be typed, double-spaced, and stapled (***NO folders or binders***).

The paper is worth a total of 100 points.

Your grade is based on how well you understood and applied the principles of learning and how well you addressed each section described in this grading rubric. Whether or not you were successful with your target behavior will have no bearing on your grade.

**Clovis Community  
College World History I  
HIST. 1130  
Fall 2019**

Instructor:  
Office:  
Office Hours:  
Phone:  
E-mail:

**Email and Availability:**

You are issued student email accounts and linked Canvas message accounts, and we will use these accounts as our primary form of communication outside the classroom. I suggest you to contact me via e-mail or Canvas message if you have a question or concern, as I check my email frequently, and check yours often as I will use it to make announcements concerning weathers delays, etc. I will reply to all email inquiries within 24 hours during weekdays, or 48 hours during weekends. You may also contact me via phone or come by during office hours.

Course Start Date:  
Course End Date:

**Online Access:**

[www.canvas.clovis.edu](http://www.canvas.clovis.edu)

**Course Description:**

The primary objective of this course is to serve as an introduction to global history from ancient times to the modern era. The elements of this course are designed to inform students on the major events and trends that are essential in the understanding of the development of world societies.

**Student Learning Outcomes:**

- 1) Students will be able to explain in their work how humans in the past shaped their own unique historical moments and were shaped by those moments, and how those cultures changed over the course of the centuries of global history from ancient times to the present.
- 2) Students will distinguish between primary and secondary sources, identify and evaluate evidence and empathize with people in their historical context.
- 3) Students will summarize and appraise different historical interpretations and evidence in order to construct past events.
- 4) Students will identify historical arguments in a variety of sources and explain how they were constructed, evaluate credibility, perspective, and relevance.

- 5) Students will create well-supported historical arguments and narratives that demonstrate an awareness of audience.
- 6) Students will apply historical knowledge and historical thinking in order to infer what drives and motivates human behavior in both past and present.

**Required Textbook:**

Upshur, Terry, et al. *World History: Before 1600: The Development of Early Civilization*, Volume I, 5th Ed., Cengage Advantage Books, 2012.

ISBN-10: 1-111-34516-3

ISBN-13: 978-1-111-34516-7

You may purchase the textbook from the CCC Bookstore or online. If you are a distance learner, I recommend you call the CCC bookstore at 575-769-4050 for UPS delivery (to insure quick delivery and make sure you get the right edition). But do so quickly as you have assigned readings the second week!

Use the above ISBN numbers to order the right book.

**Canvas:**

Clovis Community College's online classes offer anytime, anyplace, distance learning over the Internet. Our accredited online classes offer you the flexibility and convenience to complete many of your degree requirements from any computer that has Internet access. Students may also use the college's computer lab for their online coursework. The entirety of this class will be conducted through the Canvas course provided.

Orientation: A Canvas orientation course is available to familiarize yourself with our online learning management system at <https://cloviscc.instructure.com/courses/276879>

**Technical Skills Needed:**

Students need access to a laptop or pc computer with internet, and students must be able to use email with attachments, attach files, create a discussion thread, and respond to the threads of others. These are important aspects of the class; do not hesitate to ask if you need assistance with any of the tasks mentioned. Student assessment will be accomplished via instructor evaluation of a quizzes, discussion board conversations, and examinations as follows:

**Submitting Assignments:**

All assignments must be submitted in the online classroom. Please pay close attention to the due dates and note that all online course messages and submissions are automatically date and time stamped using MST, Clovis time. Make sure you know what time it is when you submit your assignments as there are specific due dates and times that are spread out over the week so you are not overwhelmed.

## **Course Requirements and Grading Policy:**

There will be two proctored exams in this class – a midterm and a final exam. In addition, there will be one quiz and written “Discussion Board” assignment due each week based upon the readings, videos, and PowerPoint Lectures. You will find all weekly assignments and study materials such as PowerPoint lectures and videos in “Modules.” You will also be reminded of the week’s assignments in the “Announcements” section, so check it often.

Grades will be broken-down as follows:

Exam 1	= 125 points
Exam 2	= 125 points
Quizzes	= 420 points (30 points each)
Discussion Board	= 280 points (20 points each)

Final Grades will be calculated on the following scale:

A = 950-855 points
B = 854-760 points
C = 759-665 points
D = 664-570 points
F = Below 570 points

## **Reading/PowerPoint Lectures/Videos:**

In addition to the weekly textbook readings, additional PowerPoint lectures and videos will be assigned to supplement reading. Information from these additional sources will appear on tests and should appear in discussions.

## **Syllabus Quiz (30 pts.):**

During Week 1, each student will print this syllabus and familiarize herself/himself with its contents. The student will then take a brief quiz about its contents. The quiz is available during the first week, and for one additional week, at the “Week 1: In the Beginning” link available within “Modules” in Canvas.

## **Weekly Quizzes (30 pts. each):**

Quiz material is drawn from the textbook and from any supplemental content posted by the instructor. Quizzes are not cumulative and will be specific to anything covered in the lesson materials for a given week. Each quiz shall consist of two kinds of questions: multiple-choice questions or true/false statement prompts. The quizzes will be available at 12:00 p.m. on the Monday of the week of the quiz and will remain open until the due date Sunday, and students may take the quiz anytime during that time.

## **Weekly Discussion Board (20 pts. each):**

Students will participate in weekly discussions, and students will be required to have one original post on the instructor-selected topic and respond to at least one fellow students' original post each week. See Discussion Rules and Rubric on Canvas for specific details regarding expectations for the Discussion Board.

### **Proctored Midterm and Final Exams (125 pts. each):**

There will be a midterm and a final exam, counting for approximately 25% of your grade. The exams will be cumulative for each half of the semester. Thus, each will cover about four chapters of readings, quizzes, lectures, and written discussion board assignments. The format will be multiple choice and one essay.

These exams will be taken during the scheduled midterm and finals weeks and will be proctored. This means the student will have to make arrangements to do one of the following: take the exam at the CCC Testing Center, take the exam at a Testing Center of a local college outside of Clovis, or the student can pay a fee to use the online service Proctor U. Students are personally responsible to make arrangements to attend the midterm and final exam in one of the listed options, and the arrangements must be made at least one week beforehand.

Midterm Exam: Upshur Chapters 1-4 in the textbook, videos, quizzes, PowerPoint lectures, and Discussion Board questions.

Final Exam: Upshur Chapters 5-8 in the textbook, videos, quizzes, PowerPoint lectures, and Discussion Board questions.

### **Attendance Requirements and Participation:**

Attendance is required for all sessions of this course. When circumstances make attendance impossible, students should notify the instructor of their absence as soon as possible. Students are responsible for making sure they are caught up with the class lectures and assignments, so they are able to attend the next class session prepared.

Attendance will be recorded weekly, and this means that you must participate in the weekly assignments or you will be counted absent – even if you logged on, but did not participate or complete any assigned work. If you miss three weeks without participating, you will be in grave jeopardy of failing. If you have an illness or some other mitigating circumstance, you will need to contact me immediately to discuss your situation and make arrangements.

### **Remediation and Make-up:**

Student Success Programs: Clovis Community College offers students several free services staffed by specialists and tutors. These include: The Center for Student Success (room 171 where computers for student use are also available), the Writing Center (room 172), and many other resource for student success. Students may walk in, schedule appointments, or attend mini sessions.

Late assignments or quizzes will be accepted only on approval of the instructor. Computer failure and trips (personal or school related) are not an acceptable excuse for failure to turn in an assignment. Students have access to computers at CCC and any public library. All hotels provide Wi-Fi and/or have a business center that provides computers with internet access for those who do not have an electronic device with them. It is rare that internet access is not available so please do not try to use this as an excuse. If the assignment is late, it will accrue a late penalty of 50 percent the day after the assignment is due. Everyone is required to participate in discussions in a timely manner each week. It is not possible to complete this class with a passing grade without such participation. The beauty of an online class is that students can complete the assignments on their own time; because of this, the late assignment policy will be strictly enforced. This class is not a self-paced class and assignments have due dates. Trips are not excuses to ask for an extension; however, there are some situations that may call for an extension, but I will determine those.

### **Discussion Rules:**

Students must uphold a mature level of interaction with each other and with the instructor. Please respect other students when they respond to the learning group discussion. Part of this learning process includes the acquisition or honing of life skills associated with online collaboration as a group including a civil discussion of differences of ideas. Grades of students who fail to display appropriate behavior, decorum, respect, or kindness to each other will be adjusted accordingly (this includes responding to questions posed by other students). Student's original posts, as well as responses, must be relevant to the lead question for each discussion, failure to adhere to this will reflect negatively on the student's grade. Students must respond, on a separate day, with intelligence to other students' posts. Responses such as "Good job," "I really liked how you brought out..." "It is amazing how they were..." etc. are not acceptable response posts (unless they are accompanied with more intelligent information), nor will responses that are simply questions to the author of the original post (unless accompanied by more intelligent information). These types of responses will not be considered as a response post and a zero will be given for those responses.

All original posts are due Thursday and at least one response is to be made on a separate day to another student's post, which are due Saturday of the week assigned. It is a general rule that the more a student participates in the discussion board the more the student learns; so, try to participate as much as possible. Be sure to check your Canvas regularly, checking in once a week will not be beneficial to students. It is expected that students respond to questions of their fellow students and the instructor. (See Group Discussion Rules and Rubric for more details.)

### **Starfish Early Alerts:**

Clovis Community College uses Starfish Early Alert as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need,

your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at <http://www.clovis.edu/students/starfish.aspx> . If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

### **Withdrawal:**

If students are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, they should withdraw from the class after they have spoken with their instructor and academic advisor. Instructors do not withdraw students. Dual credit students must contact their high school counselor.

### **Disputed grades:**

Students who disagree with a grade should consult the instructor.

### **Academic Dishonesty and Standards:**

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the college catalog. Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor’s evaluation of the severity of the dishonest act. Consult the college catalog for more information on the institutional policy on academic integrity.

### **Qualified Students with Disabilities:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

### **Copyright:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post

information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

### **Technical Support:**

CCC Help Desk support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4747. Be sure to visit the Canvas Student Orientation site if you need help navigating our online classroom. You may also find answers to common questions / problems on Canvas FAQs.

### **Help Desk Hours:**

Monday-Thursday 7 a.m. to 7 p.m.

Friday 7 a.m. to 4:30 p.m.

Interim, Monday-Friday 7 a.m. to 4:30 p.m.

### **Computers on Campus:**

Computers for student use are available on campus in the Center for Student Success (room 171). Please call 575.769.4095 for more information. The Center is open Monday-Thursday from 8 a.m. to 8 p.m. and 8 a.m. to 4:30 p.m. on Fridays. It is closed weekends and holidays.

The employees in the Center are there to assist students and faculty with computer functions such as power-up, keyboard operations, printer operations, and software problem determination. They are not expected, however, to instruct students or be a substitute for a faculty member. Any help from assistants should be considered a suggested solution and may be different from the solution expected by the instructor. When in doubt, contact your instructor.



**Clovis Community College**  
**American Military History**  
**HIST. 2145**  
**Fall 2019**

Instructor:  
Office:  
Office Hours:  
Phone:  
E-mail:

**Email and Availability:**

You are issued student email accounts and linked Canvas message accounts, and we will use these accounts as our primary form of communication outside the classroom. I suggest you to contact me via e-mail or Canvas message if you have a question or concern, as I check my email frequently, and check yours often as I will use it to make announcements concerning weathers delays, etc. I will reply to all email inquiries within 24 hours during weekdays, or 48 hours during weekends. You may also contact me via phone or come by during office hours.

Course Start Date:  
Course End Date:

**Online Access:**

[www.canvas.clovis.edu](http://www.canvas.clovis.edu)

**Course Description:**

This course is a survey of the American military experience from colonial times to the present. Our purpose is to understand the history and traditions of our armed forces as they have changed over the years. Our study will examine the political, economic, social, and intellectual contexts that have shaped our institutions of war and peace. Throughout the semester we will concentrate on honing our analytical and communication skills.

**Student Learning Outcomes:**

To acquire an understanding of the contributions that the American military have made to war and peace throughout the history of the United States...

1. Understand the evolution of the Army's approach to warfare through the Guardian, Heroic, and Managerial schools of thought.
2. Appreciate the key relationship between political activity and policy with warfare.
3. Assess the ongoing role that militias have played.
4. Wrestle with the ongoing debate over the roles of conventional and unconventional warfare.

5. Realize the importance of external support to indigenous military operations.
6. Recognize the impact of the armed forces in American expansion.
7. Understand the place of our wars in shaping society.
8. Comprehend the relationship of diplomacy, politics, economics, and security issues in establishing national strategic policies.
9. Discover the roots of the military-industrial complex during the twentieth century.
10. Assess the impact of the modern security state on American society.
11. Determine the sources of professionalism among military leaders.  
To interpret sources and data in historical context...
12. Read and evaluate primary and secondary source materials.
13. Understand the role of revisionism in military history.  
To reflect on the roles that personal integrity, professional leadership, and communal ethics play in the day-to-day behavior of individuals and institutions.  
*To develop verbal, written, and analytical skills...*
14. Through discussion, assessments, and essays.  
To think historically and learn to formulate questions about the past and present, resolving conflicting interpretations, and drawing tentative conclusions from imperfect evidence...
15. Through the in-depth study of the American military experience.

### **Required Textbook:**

Allison, William T., et al. *American Military History: A Survey from Colonial Times to the Present*, 2<sup>nd</sup> Edition, Pearson, 2013.

ISBN 13: 978-0-205-89850-3

You may purchase the textbook from the CCC Bookstore or online. If you are a distance learner, I recommend you call the CCC bookstore at 575-769-4050 for UPS delivery (to insure quick delivery and make sure you get the right edition). But do so quickly as you have assigned readings the second week!

Use the above ISBN number to order the right book.

### **Canvas:**

Clovis Community College's online classes offer anytime, anyplace, distance learning over the Internet. Our accredited online classes offer you the flexibility and convenience to complete many of your degree requirements from any computer that has Internet access. Students may also use the college's computer lab for their online coursework. The entirety of this class will be conducted through the Canvas course provided.

Orientation: A Canvas orientation course is available to familiarize yourself with our online learning management system at <https://cloviscc.instructure.com/courses/276879>

### **Technical Skills Needed:**

Students need access to a laptop or pc computer with internet, and students must be able to use email with attachments, attach files, create a discussion thread, and respond to the threads of others. These are important aspects of the class; do not hesitate to ask if you need assistance with any of the tasks mentioned. Student assessment will be accomplished via instructor evaluation of a quizzes, discussion board conversations, and examinations as follows:

### **Submitting Assignments:**

All assignments must be submitted in the online classroom. Please pay close attention to the due dates and note that all online course messages and submissions are automatically date and time stamped using MST, Clovis time. Make sure you know what time it is when you submit your assignments as there are specific due dates and times that are spread out over the week so you are not overwhelmed.

### **Course Requirements and Grading Policy:**

There will be two proctored exams in this class – a midterm and a final exam. In addition, there will be one quiz and written “Discussion Board” assignment due each week based upon the readings, videos, and PowerPoint Lectures. You will find all weekly assignments and study materials such as PowerPoint lectures and videos in “Modules.” You will also be reminded of the week’s assignments in the “Announcements” section, so check it often.

Grades will be broken-down as follows:

Exam 1	= 125 points
Exam 2	= 125 points
Quizzes	= 450 points (30 points each)
Discussion Board	= 300 points (20 points each)

Final Grades will be calculated on the following scale:

A = 1000-900 points
B = 899-800 points
C = 799-700 points
D = 699-600 points
F = Below 599 points

### **Reading/PowerPoint Lectures/Videos:**

In addition to the weekly textbook readings, additional PowerPoint lectures and videos will be assigned to supplement reading. Information from these additional sources will appear on tests and should appear in discussions.

### **Syllabus Quiz (30 pts.):**

During Week 1, each student will print this syllabus and familiarize herself/himself with its contents. The student will then take a brief quiz about its contents. The quiz is available during the first week, and for one additional week, at the “Week 1: In the Beginning” link available within “Modules” in Canvas.

### **Weekly Quizzes (30 pts. each):**

Quiz material is drawn from the textbook and from any supplemental content posted by the instructor. Quizzes are not cumulative and will be specific to anything covered in the lesson materials for a given week. Each quiz shall consist of two kinds of questions: multiple-choice questions or true/false statement prompts. The quizzes will be available at 12:00 p.m. on the Monday of the week of the quiz and will remain open until the due date Sunday, and students may take the quiz anytime during that time.

### **Weekly Discussion Board (20 pts. each):**

Students will participate in weekly discussions, and students will be required to have one original post on the instructor-selected topic and respond to at least one fellow students’ original post each week. See Discussion Rules and Rubric on Canvas for specific details regarding expectations for the Discussion Board.

### **Proctored Midterm and Final Exams (125 pts. each):**

There will be a midterm and a final exam, counting for approximately 25% of your grade. The exams will be cumulative for each half of the semester. Thus, each will cover about four chapters of readings, quizzes, lectures, and written discussion board assignments. The format will be multiple choice and one essay.

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Midterm Exam: Allison Chapters 1-8 in the textbook, videos, quizzes, PowerPoint lectures, and Discussion Board questions.

Final Exam: Allison Chapters 9-17 in the textbook, videos, quizzes, PowerPoint lectures, and Discussion Board questions

### **Attendance Requirements and Participation:**

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they are able to attend the next class session prepared.

Attendance will be recorded weekly, and this means that you must participate in the weekly assignments or you will be counted absent – even if you logged on, but did not participate or complete any assigned work. If you miss three weeks without participating, you will be in grave jeopardy of failing. If you have an illness or some other mitigating circumstance, you will need to contact me immediately to discuss your situation and make arrangements.

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met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

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### **Technical Support:**

CCC Help Desk support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4747. Be sure to visit the Canvas Student Orientation site if you need help navigating our online classroom. You may also find answers to common questions / problems on Canvas FAQs.

### **Help Desk Hours:**

Monday-Thursday 7 a.m. to 7 p.m.  
Friday 7 a.m. to 4:30 p.m.  
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**Clovis Community College – Clovis, NM**  
**ENG 104/1120 Composition II**  
**Spring 2019 –11457, 10197 - Sections 103, 105 - 3 credit hours**

**Clovis Community College Mission**

The mission of Clovis Community College, an institution of dedicated educators, professionals, and students, is to serve and empower lifelong learners who are seeking educational opportunities within and beyond the limits of our communities by being learner-centered, embracing advances in technology, and making accredited, high-quality education affordable and accessible (CCC 2018-2019 Course Catalog).

**Instructor:**

**Meets:**

**Office Hours:**

**Email / Phone:**

**Course Description** (from CCC 2018-2019 Course Catalog)

*Prerequisite: A grade of "C" or higher in ENG 102. A continuation of ENG102 with emphasis on the research paper.*

**Common Course Code & Description** (per NM state)

ENGL 1120

In this course, students will explore argument in multiple genres. Research and writing practices emphasize summary, analysis, evaluation, and integration of secondary sources. Students will analyze rhetorical situations in terms of audience, contexts, purpose, mediums and technologies and apply this knowledge to their reading, writing, and research. Students will sharpen their understanding of how writing and other modes of communication work together for rhetorical purposes. The emphasis of this course will be on research methods.

**Exploring Writing Argument and Literature in ENG 104**

This course will help you continue refining your critical reading and writing skills. By reading a variety of texts (including fiction, non-fiction and poetry) and exploring argumentation techniques, you will develop critical thinking skills for evaluating and analyzing what you read. In addition, you will gain insight on a variety of issues through the perspectives of others. Through a combination of reading and writing you will acquire skills that enable you to write arguments that encourage, persuade and call readers to action.

**Student Learning Outcomes** (per NM HED Composition II State competencies)

1. Analyze the rhetorical situation for purpose, main ideas, support, audience, and organizational strategies in a variety of genres.
2. Employ writing processes such as planning, organizing, composing, and revising.
3. Use a variety of research methods to gather appropriate, credible information.
4. Evaluate sources, claims, and evidence for their relevance, credibility, and purpose.
5. Quote, paraphrase, and summarize sources ethically, citing and documenting them appropriately.
6. Integrate information from sources to effectively support claims as well as other purposes (to provide background information, evidence/examples, illustrate an alternative view, etc.).
7. Use an appropriate voice (including syntax and word choice).

**Goals for Students**

The student learning outcomes that will be covered in ENG104 are as follows:

Students will understand more fully:

1. Prewrite, draft, edit and revise two research essays.
2. Recite and incorporate the features of a research essay into writing including a thesis statement, structured claims and counter-arguments.
3. Research a topic and integrate a variety of sources into writing.
4. Demonstrate mastery of language in academic writing in order to encourage, persuade or call readers to action.
5. Read a variety of texts, including fiction, non-fiction and poetry to gain a greater understanding and appreciation for the human experience.

Students will develop, ideally, the following attitudes:

1. A desire to identify and refine their own writing processes.
2. A confidence in their writing abilities.



3. A respect for the value of feedback from others.
4. An awareness of the power of language to shape meaning and understanding.

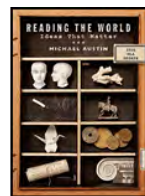
## Required Textbook

*Reading The World Ideas That Matter* - 3<sup>rd</sup> edition - by Michael Austin

Publisher: Norton

ISBN# 9780393617429

**The bookstore offers PRICE MATCHING** (Amazon, Barnes & Noble). Visit the bookstore with 1) website or location of lower price 2) Textbook ISBN number 3) New, Used or Used Rental 3) Keep in mind: restrictions may apply



## Required Supplies & Resources

- **Internet**
  - **CCC Email** – *course correspondence happens here*
    - You are responsible for any emails you receive to your CCC student email
    - Instructors cannot communicate with you via your personal email address
  - **Canvas** – *course correspondence, required documents and assignment submissions*
  - **Starfish** – *your academic progress is monitored here*
- **A computer**
  - Equipped with Microsoft Office (Word, PowerPoint) + Internet
    - Upon entering this class, you should have the basic skills needed to operate both a computer Microsoft Office programs
  - Should be Five (5) years old or NEWER
  - Ability to save your documents
  - **Need a Computer?** Computers for student use are available on campus in the [Center for Student Success](#) (or the library)
    - Center for Student Success (Room 171)
    - Desktops available for daily use / Laptops can be checked out for seven (7) days at a time
    - Center for Student Success Hours: M-R 8:00-8:00 PM / F 8:00-4:30 PM
    - Staff is available to assist in computer operational (keyboard, printing etc.) instruction
    - Additional computers are available in the library
- **Notebook, pens/pencils** – for taking class notes

## Course Requirements & Evaluation

Assignment	Point Total	% of Grade (approx.).
“Object” Essay	2000 pts.	60%
“Proposing a Solution” Essay	2000 pts.	
Prewriting Assignments	20-30 pts. ea.	20%
Essay Rough Drafts	500 pts. ea.	
Essay Revision (Peer & Individual)	50 pts. ea.	
Quizzes	5 pts. ea.	
Participation*	1,080 pts. (MW) 1,120 pts. (TR)	20%

\*MW: 27 classes (beg. 1/23 incl. final exam) / 40 pts. per day

\*TR: 28 classes (beg. 1/22 incl. final exam) / 40 pts. per day

## Essay Format-APA

Unless otherwise instructed, all essays should be submitted as a WORD document in APA format. If applicable, sources should be properly cited THROUGHOUT the essay (in-text citations). Your essay should also include a source (References) page that lists the publication information of all referenced scholarly sources. Prior to submission, all essays should be revised (two or more times) and checked for correct grammar, punctuation, spelling and source citation.

## Reading Content

- Reading assignments will be a collection of readings from the required textbook, online articles and online copies of literature including fiction, non-fiction and poetry.
- Links and/or copies of online readings will be provided in CANVAS.
- **It is your responsibility to access various readings via CANVAS or online** and read them before the due date. Paper copies may not be provided, although you may print copies for your own use, if you prefer.
- **Reading content:** The beauty of literature is exposing ourselves to a variety of perspectives and beliefs through different uses of rhetoric.
  - Keep in mind...
    - Various assigned readings may contain language or themes which may differ from or challenge your own personal beliefs.
    - At no point will you be encouraged or required to agree or subscribe to any of the beliefs or perspectives outlined in any of the course readings.
    - However, you will be expected to read all assigned readings.
    - Selecting (or being assigned) a different reading assignment in place of the previously assigned reading is NOT an option *for any student*.
  - If this is concerning to you, you are welcome to research and read the plot summaries of all assigned course readings, as outlined on the provided Semester Schedule. Based on the plot summaries, if you prefer not to read or discuss one or more of the assigned course readings, you may drop this ENG104 section and enroll in a different ENG104 section (all instructors assign different reading assignments). I would encourage you to also speak with me if you feel hesitant to continue in the course due to assigned reading content.

## Writing Resources

- **APA Guidelines or Writing Tips:** Refer to your text: *Reading the World Ideas That Matter*
- **Scholarly Research:** [www.clovis.edu](http://www.clovis.edu) -> STUDENTS -> LIBRARY -> DATABASES BY SUBJECT
- **Email, call or make an appointment with me.**
- **Ask a fellow peer** to read your essay and offer suggestions for improvement.
- **Writing Center:** This is a **free** service available for all students who seek help with any writing assignment. You may bring your essay to the writing center at ANY STAGE of the writing process for help and suggestions on improving your writing. LOCATION: Library, next to the Cyber Café HOURS: M-R 10-6 PM

## Academic Dishonesty

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the CCC Student Course Catalog 2018-2019 (pp. 7-8) [http://www.clovis.edu/publications/docs/Catalog\\_2018-2019.pdf](http://www.clovis.edu/publications/docs/Catalog_2018-2019.pdf)  
Academic dishonesty is unacceptable at Clovis Community College and in this course.

Any student who commits any form of academic dishonesty, including plagiarism, risks receiving a lowered (or 0) grade on the assignment or FAILING THIS COURSE.

In this course, we will cover strategies on how to recognize and avoid plagiarism.

## Grading Policy

**Late assignments:** Unless an unforeseen situation or emergency arises, *late assignments will not be accepted*. A *technology issue is not an excuse for submitting late assignments*. If you know you will be absent, make arrangements to submit your assignment by the deadline.

**Extensions:** on rare occasions if you are granted an extension for an assignment and DO NOT submit the assignment by the revised due date you will receive a 0 on the assignment. Additional extension requests, following the first, will not be granted.

**Quizzes:** quizzes will be administered on various class days throughout the semester.

- *The quiz dates will not be announced until the day the quiz will be administered.*
- If you arrive late, after the quiz has been administered, you may not be able to take the quiz
- There are NO “make-up” quizzes UNLESS you have notified me of your absence BEFORE the day you will be absent and you have made arrangements to take the quiz PRIOR to the class day you will miss.

### Essays:

- **Failing to submit the FINAL DRAFT of an essay:** will result in a 0 on the essay, with no opportunity to submit after the deadline. Depending on the student's grade *before or after* receiving the 0, the student may fail the course as a result of the missing essay.
- **Failing to meet the minimum requirements on the FINAL DRAFT of each essay:** will result in a deduction of points, per each criteria/requirement not met, as outlined on the applicable essay guideline. This deduction of points will be subtracted from the student's overall essay grade.

### Assignment Grading:

- *Assignments & Essays:* will be graded using a point system 95/100 = A, 80/100 = B-, etc.
- *Final Grades:* will be determined using the following grade scale:  
90 - 100 A / 80 - 89 B / 70 - 79 C / 60 - 69 D / 59 or below F (failing grade)
- *Extra Credit:* No extra credit will be offered for this course
- *Grading Rubric for essays:* see essay guidelines and/or CANVAS
- *Essay Grading:* Please allow a 2-4 week (from due date) grading period for all written essays.



### Extra Opportunities to boost your grade:

- There is no "official" extra credit offered in this course, however, keep the following in mind if you are looking to boost your grade throughout the semester...
  - *Participation points:* follow the attendance and participation guidelines (below), to receive participation points.
  - *In class assignments:* there are several in-class assignments. Attend class and complete these assignments.
  - *Quizzes:* Be sure you complete all assigned readings and attend class, ON TIME, to successfully complete quizzes.

## Submitting Assignments

- Many (not all) assignments will be required via CANVAS submission and must be submitted by the listed deadline on the Semester Schedule.
- Deadlines are automatically date and time stamped using MST.
- Assignments cannot be resubmitted, for a higher grade, once graded.
- No extensions will be given for incorrect or inaccessible files.
- File Formats:
  - Microsoft Word (.doc or .docx files are best to use for writing assignments).
  - If you will use Google Docs, please DOWNLOAD the document to a Word file before submitting it or sending it to me for review
  - You must make arrangements to ensure you are submitting a document that is compatible with CANVAS.
- Technology issues: A technology issue (or submitting the incorrect document) is **NOT** an excuse for submitting late assignments. If you are experiencing technology issues via CANVAS...
  - 1) Please EMAIL the assignment to ME PRIOR to the deadline
  - 2) Contact Technical Support for assistance (see CANVAS homepage/syllabus p. 1 for contact info)
  - 3) In the rare occurrence that BOTH CANVAS and CCC EMAIL are not working, call me immediately and leave a message, then contact Technical Support.

## Class Etiquette, Class Discussion & Study Skills

Be Prepared: It is critical that all students dedicate sufficient time to complete course requirements and actively participate in all required discussions and assignments. Each student should **plan to spend 6 hours or more (per week) outside of class completing required readings and assignments**. All students are expected to arrive to each class with the completed assignment and prepared for any in-class discussion or work.

Be Respectful: During class discussion students should offer relevant comments related to the subject and remain respectful and courteous toward the opinions of others. Behavior that disrupts teaching and learning is unacceptable. If a student chooses to engage in any distracting, disrespectful or potentially dangerous behavior during the class period – **that student will be asked to LEAVE and/or Campus Security may be called**. The student will be considered absent (see attendance policy below) for the class period and the student's grade and/or current standing within the course will be affected if the situation merits.

Electronic Devices and Cell Phones: Use is strictly prohibited unless approved by the instructor. Cell phones are to be turned off/set to "silent" and NOT accessed in the classroom. Refraining from the use of cell



phones is a college policy (see p. 11 in Course Catalog) and will be enforced. If you need to use your cell phone for ANY REASON, please leave the room prior to using your cellphone. Students who choose to engage in unauthorized use of electronic devices will risk losing participation points and/or be asked to leave the class until the NEXT class period (see above).

*Course grade may be severely affected if the required class etiquette and study skills are not met.*

## Attendance & Participation

Attendance is expected and required at all sessions in each course for which the student is enrolled. If you miss class you are still responsible for all assignments and content covered. *It is not the instructor's responsibility to reiterate course content that was covered on the days students miss class.* Any missed assignments are considered late and will not be accepted.

**AFTER Jan. 18 (drop deadline):**

**Participation Points:** are available throughout the course of the semester: 40 pts. per class period. Participation is based on your presence **and** participation in class. To receive participation points you must be present, participating, prepared, ask questions, contribute to class discussion and be engaged during class lectures. Any graded in class activities require the student's presence and participation in class. *A student's participation grade is ultimately determined by the instructor based on student's participation throughout the semester.*



### CONSIDERED ABSENT

- Arriving to class late (at or after 15 minutes from the start time)
- Leaving class early (at any time prior to the last 15 minutes)
- Missing the entire class period **for any reason**

### NO or REDUCED PARTICIPATION POINTS

- Arriving to class late (at ANY TIME)
- Leaving class early (at ANY TIME)
- Excessively leaving and returning to class
- Failing to adhere to class etiquette (above)
- Not actively engaging and participating
- Considered Absent (see left)

**There are no “excused” absences. An absence is considered an “absence,” regardless of the circumstance.**

**Final Exam Day** – attendance is mandatory. Failure to attend the final exam will result in a 0 on the final exam (final essay) EVEN if the final essay is submitted on time.

## Course “Drop” and Withdrawals

**Students have the ultimate responsibility of withdrawing from the course, by the withdrawal deadline, if they feel they will be unable to complete it successfully.**

Students may drop or withdraw this course by the designated deadlines as indicated on the Academic Calendar.

Drop - will not be reflected on the student's transcript, but may result in financial aid implications.

Withdrawal - the course WILL be listed on the student's transcript with a “W.” “W” has no impact on the student's G.P.A.

**Drop deadline:** Jan. 18

**Withdrawal deadline:** Apr. 12

## Copyright

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

## Early Alert & Retention: Starfish

Clovis Community College uses **Starfish Early Alert** as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at <http://www.clovis.edu/students/starfish.aspx>. If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

### **Qualified Students with Disabilities**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Special Services Office (575-769-4099) in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside of the classroom. Students may also request a referral.

### **Emergency Alert / Campus Closure / Cancelled Class**

In case of campus closure, a recording will be placed on the switchboard (575-769-2811) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. Students may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

If a class period will be cancelled due to an instructor absence, students will be notified via email from me and an announcement will be posted to CANVAS.