



## New Mexico General Education Curriculum Course Certification Form

Application Number

2003

### Institution and Course Information

Name of Institution	Mesalands Community College
Chief Academic Officer Name	Joel Kiser
Chief Academic Officer Email	joelk@mesalands.edu
Registrar Name	Brian Bailey
Registrar Email	brianb@mesalands.edu
Department	History
Prefix	HIST
Number	2145
Suffix	
Title	American Military History
Number of Credits	3

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	N/A
Number	N/A
Suffix	N/A
Title	N/A

### New Mexico Common Course information

Prefix	HIST
Number	2145
Suffix	N/A
Title	American Military History

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

Communications     Mathematics     Science     Social & Behavioral Sciences  
 Humanities     Creative & Fine Arts     Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

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

- 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.
  12. Interpret sources and data in historical context.
  13. Read and evaluate primary and secondary source materials.
  14. 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.
  15. Develop verbal, written and analytical skills.
  16. 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 through the in-depth study of the American military experience.
  17. Describe how US military history and policy has impacted social history.

**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 (~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 skill. 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.*

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

Students exercise using historical resources for critical thinking by evaluating that evidence, the setting in which the source was created, and reaching conclusions based on those sources and the historical context provided by other course materials. They are assigned primary sources weekly to evaluate sources directly from the historical actors. They are then quizzed on those readings to evaluate their understanding and interpretation of the sources. An example of the reading quizzes is attached.

Using primary and secondary sources, students will consider the motivations and efficacy of Army doctrines, the role of militia in American military doctrine, the role of support in warfare, political activity and policy in warfare, the role of the civilian soldier in war, the nature of conventional and unconventional warfare, the paradox of a peacetime military and a military-industrial complex, and the role of revisionism in history.

The attached quiz (Fig. 1) is an example of an evaluation of this Critical Skill.

Evaluations for this Critical Skill satisfy SLOs 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 13, 14, 15, and 17.

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

Students will have to wrestle with questions and issues relative to the relationship between the military, the government, civilians, and marginalized populations. These issues pertaining to American expansion, diplomacy, politics, economic, and the modern security state will prepare students to draw personal and socially responsible and ethical conclusions regarding the dynamics between those with power and those without. Through the self-reflection in the film review, book review, essay, and reading quizzes, students will experience examples of ethical and unethical behavior and reconcile that behavior with established American military doctrine and cultural values. The attached quiz (Fig. 1) is an example of an evaluation of this Critical Skill.

Evaluations for this Critical Skill will satisfy SLOs 1, 2, 4, 5, 6, 7, 8, 11, 12, 13, 15, 16, and 17.

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

Students will access, read, evaluate, and interpret primary and secondary source materials from digital archives in order to complete their research and other assignments. Students will learn how to find information from digital archives and learn how to cite sources, create works cited pages, cite in-text sources accurately and completely, and

how to find answers to their own questions using available online research, writing, and citation aids. These tools will carry over into any other college course or professional environment with a writing or research component. Students will also learn through the reading quizzes, writing of scholarly book reviews, and process of crafting an original argument and research paper how to interpret sources and data in their historical context, which resources are more reliable and which ones are less likely to be reliable.

Evaluations for this Critical Skill will satisfy SLOs 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, and 17.

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

Link to Institution's General Education Assessment Plan	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.mesalands.edu/wp-content/uploads/2020/01/SLAC-Annual-Report-2018-19-Final.pdf
---	---

## Fig. 1 Sample Reading Quiz

### “Limits of Counterinsurgency Reading Quiz”

Read “The Runaway General” by Michael Hastings and “The Limits of Counterinsurgency Doctrine in Afghanistan” by Karl Eikenberry and answer the following questions. Responses to each question should be between 200 and 350 words.

1. What is General McChrystal’s attitude toward insurgents?
2. What is McChrystal’s attitude toward politicians? What features of military-civil relations does this attitude reveal?
3. What ethical challenges exist to conducting counterinsurgencies? How can these problems be addressed?
4. How do the problems faced by modern counterinsurgency compare to the problems faced by the American military as it dealt with Native Americans in the nineteenth century?

## Fig. 2 Sample Book Review Instructions and Rubric

### How to Write a (Good) Book Review

An effective book review is a critical analysis of a book. It is not a book report, nor an extensive review of a book’s subject. Instead, a good book review will clearly explain the book’s subject, state the author’s thesis or intention in writing the book, evaluate how well the author proves her or his thesis, and briefly provide your opinion about the work. Your grade will be determined by how well you accomplish these goals, how clearly you communicate your ideas, and how well you follow these instructions.

All reviews should be 800 words long. Please set your margins at one inch on all sides and use a twelve-point Times New Roman font. Include your name, the course number, and the date at the top of the page (do not submit a cover page), then number the following pages. Before the review, include the bibliographic citation for the book. The format for books is as follows (note that the first line is flush and each remaining line is indented. Also pay attention to the usage of italics and punctuation.):

Davis, Janet M. *The Circus Age: Culture and Society under the American Big Top*. Chapel Hill: University of North Carolina Press, 2006.

To write a good review, it is critical that you read the book. While that statement seems obvious, reading involves more than simply scanning a page and reading words. It will be nearly impossible for you to simply read the book and then write a good review from memory. You should take notes on what you read, paying careful attention to what the author argues in each chapter, the evidence given to support the thesis, and whether or not the author convincingly proves her or his point. It will be helpful in writing your review to write an outline of each chapter

while reading. Then write your review based on the notes you made while reading. Be sure to organize your thoughts in a clear manner.

The first paragraph of your review should introduce the subject of the book. This paragraph should not be more than a few sentences but should give readers a general idea of what the book is about. Then explain the author's thesis and the major themes of the book. In historical monographs, the author will clearly explain the thesis in the introduction of the book. In other historical books, the author might not have a specific thesis. Instead, she or he will be trying to demonstrate a historical trend or theme by examining a particular topic. In either case, your first paragraph should clearly explain the author's purpose in writing the book.

In the next several paragraphs, evaluate how well the author demonstrates the book's thesis. What evidence does the author provide to prove the overall thesis? Your review will need to convey how the author links the evidence provided to the overall thesis or message of the book. Throughout, consider how well the author makes connections between claims and evidence. If you believe that the author does effectively demonstrate her or his thesis, explain why. If you believe that the author does not effectively demonstrate her or his thesis, explain why not. If you quote from the book, please be sure to include a parenthetical reference to the page number from which you take the quote. (xx) However, you should use quotes sparingly and only to illustrate a point that you cannot express in your own words.

In the final (and very brief) paragraph, offer your evaluation of the book. Did you like it, and why or why not? Did you have prior knowledge or opinions about the subject matter? Did the book reinforce or challenge your views? Does the book raise issues that relate to other areas of study? What broad lessons can readers learn from the book (aside from the obvious subject matter)?

**General Education Competency  
Communication – Writing  
Rubric**

Criteria	Excellent (4)	Proficient (3)	Adequate (2)	Inadequate (1)
Provides a clear, concise thesis statement.	<ul style="list-style-type: none"> <li>• Statement is clear and concise</li> <li>• Statement is well reasoned</li> <li>• Statement leads to plentiful additional discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Statement is generally clear and concise</li> <li>• Statement is mostly well reasoned</li> <li>• Statement leads to enough additional discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Statement is recognized by the reader</li> <li>• Statement has some elements of reason</li> <li>• Statement leads to some additional discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Statement is not recognized by the reader</li> <li>• Statement is not reasoned</li> <li>• Statement does not lead to additional discussion</li> </ul>
Provides supporting paragraphs which relate to the thesis.	<ul style="list-style-type: none"> <li>• Supporting paragraphs are well reasoned</li> <li>• Supporting paragraphs clearly relate to the thesis</li> <li>• Supporting paragraphs are cohesive and logically developed.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting paragraphs contain mostly well reasoned content</li> <li>• Supporting paragraphs often but not always relate to the thesis</li> <li>• Supporting paragraphs demonstrate some cohesion and development.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting paragraphs contain some well reasoned content</li> <li>• Supporting paragraphs relate to the thesis in some way</li> <li>• Supporting paragraphs demonstrate a few elements of cohesion and development.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting paragraphs do not contain reasoned content</li> <li>• Supporting paragraphs do not relate to the thesis</li> <li>• Supporting paragraphs are neither cohesive nor unified</li> </ul>



## New Mexico General Education Curriculum Course Certification Form

Application Number

2005

### Institution and Course Information

Name of Institution	Mesalands Community College
Chief Academic Officer Name	Joel Kiser
Chief Academic Officer Email	joelk@mesalands.edu
Registrar Name	Brian Bailey
Registrar Email	brianb@mesalands.edu
Department	History
Prefix	SPAN
Number	1120
Suffix	
Title	Spanish II
Number of Credits	3

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	N/A
Number	N/A
Suffix	N/A
Title	N/A

### New Mexico Common Course information

Prefix	SPAN
Number	1120
Suffix	N/A
Title	Spanish II

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

- Communications     Mathematics     Science     Social & Behavioral Sciences  
 Humanities     Creative & Fine Arts     Flex



**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

Student Learning Outcomes

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.

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 (~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 skill. 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.*

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

Through class discussions, written assignments, reading-based activities, audio-based conversation samples, and cultural research, students will develop critical thinking skills in reading writing, and listening in Spanish as well as a cultural awareness of how the Spanish language is used verbally. Using Spanish language resources in text and audio formats, students learn about familiar topics in the target language, familiar vocabulary for navigating those topics, and the basic linguistic framework so they can adapt what they learn into other similar circumstances. Students will learn the essential rules, grammar, and functions of language so they will be able to extrapolate what they have

learned and apply it to areas of the language that they have not memorized. This reasoning and conclusion is the first step toward linguistic mastery.

For example, one situation to which the students will be introduced will be a safety announcement on board a commercial airline. Students will learn through these and similar audio prompts the mannerisms of formal speech, comprehend conversations and instructions they overhear, and how to follow directions of authorities in Spanish. See Fig 1 for a sample assessment.

This assessment fulfills SLOs 1, 2, 3, 4, 5, and 6.

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

Intercultural reasoning and competence in addition to civic discourse are at the heart of any language course, and students in this course use the Spanish language as a vehicle to explore cultural and social justice along with global issues. The assignments in this section will assist students in learning and comprehending the range of personal, social, cultural, and social justice issues confronting speakers of the target language. The issues the students explore will include those confronting cultural norms and mores as well as ideas reconciling tradition and modern society. These concepts address intercultural reasoning and competence as well as civic discourse, knowledge, and engagement.

One of the attached assessments requires students to read an excerpt of an essay in Spanish regarding the Hispanic world's conception of time and respond to the article in writing. This reading not only requires the student to master the requirements for reading and comprehension, but it also requires the student to learn about a specific Hispanic cultural issue and learn sensitivity to an approach to time and punctuality that is totally foreign to many North Americans. See Fig 2.

This assignment helps students fulfill SLOs 3, 4, 5, 6, and 7.

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

Students learn to be responsible digital citizens and to responsibly use digital research resources by seeking independently authorized information, communicating in the digital realm, and producing and using digital formats, collections, and applications. As part of a final project (See Fig. 3), students will research an influential or revolutionary Hispanic icon digitally, using both English- and Spanish-language resources, and create a written report on that person in a report that meets the requirements for Digital Literacy, Information Structures, and Research as Inquiry. This bilingual research approach will teach students about the target figure, help the student learn how to find and utilize appropriate sources, and synthesize that information in written format (Fig. 4)

This assignment helps students fulfill SLOs 3, 4, 5, 6, and 7

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

Link to Institution's General Education Assessment Plan	chrome-extension://efaidnbmnnnibpcajpcgclefindmkaj/https://www.mesalands.edu/wp-content/uploads/2020/01/SLAC-Annual-Report-2018-19-Final.pdf
---	--

**Fig. 1 Airline Safety Briefing**

Students will watch the following video and respond to the questions and prompts below:



1. Identify the following words or phrases and indicate their meaning in English. Make sure to look up any words you do not already know:
  - a. Cinturón de seguridad \_\_\_\_\_
  - b. Equipaje de mano \_\_\_\_\_
  - c. Delante/delantero \_\_\_\_\_
  - d. Superior \_\_\_\_\_
  - e. Capitán \_\_\_\_\_
  - f. Salida de emergencia \_\_\_\_\_
  - g. Fumar \_\_\_\_\_
  - h. Lavado \_\_\_\_\_
  - i. Detector de humo \_\_\_\_\_
  - j. Azafata \_\_\_\_\_
  
2. How long does the announcement say the flight will last?
  
3. What does the announcement say about smoking?
  
4. What should a passenger do if they do not wish to be seated in an emergency exit row?
  
5. Find a classmate for a partner. One of you roleplay as the pasajera/o, and the other as the azafata/o. Have the pasajera/o pose a question about the flight, and the azafata/o reply. Summarize the substance of your conversation below.

## Fig. 2 Cultural Understanding sample assessment

Read the short section below and answer the questions that follow. Write your responses in Spanish.

Lee la sección corta abajo y responde a las siguientes preguntas. Escribe tus respuestas en Español/Castellano.

### *El Tiempo y El Espacio* por Julio Camba Andreu

Tengo un asunto urgente a ventilar con un amigo. Desde luego, el amigo se opone a que lo ventilemos hoy.

—¿Le parece a usted que nos veamos mañana?

—Muy bien. ¿A qué hora?

—A cualquier hora. Después de almorzar, por ejemplo...

Yo le hago observar a mi amigo que eso no constituye una hora. Después de almorzar es algo demasiado vago, demasiado elástico.

—¿A qué hora almuerza usted? —le pregunto.

—¿Que a qué hora almuerzo? Pues a la hora en que almuerza todo el mundo: a la hora de almorzar...

—Pero ¿qué hora es la hora de almorzar para usted? ¿El mediodía? ¿La una de la tarde?

¿Las dos...?

—Por ahí, por ahí... —dice mi amigo—. Yo almuerzo de una a dos. A veces, me siento a la mesa cerca de las tres... De todos modos, a las cuatro siempre estoy libre.

—Perfectamente. Entonces podríamos citarnos para las cuatro.

Mi amigo asiente.

—Claro que, si me retraso unos minutos —añade—, usted me esperará. Quien dice a las cuatro, dice a las cuatro y cuarto o cuatro y media. En fin, de cuatro a cinco yo estaré sin falta en el café. ¿Le parece a usted?

Yo quiero puntualizar:

—Digamos a las cinco.

—¿A las cinco? Muy bien. A las cinco... Es decir, de cinco a cinco y media... Uno no es un tren, ¡qué diablo! Supóngase usted que me rompo una pierna...

—Pues citémonos para las cinco y media —propongo yo.

Entonces, a mi amigo se le ocurre una idea genial.

—¿Por qué no citarnos a la hora del aperitivo? —sugiere.

Hay una nueva discusión para fijar en términos de reloj la hora del aperitivo. Por último,

quedamos en reunirnos de siete a ocho. Al día siguiente dan las ocho, y claro está, mi amigo no comparece. Llega a las ocho y media echando el bofe, y el camarero le dice que yo me he marchado.

—No hay derecho —exclama días después al encontrarme en la calle—. Me hace usted fijar una hora, me hace usted correr, y resulta que no me aguarda usted ni diez minutos. A las ocho y media en punto yo estaba en el café.

Y lo más curioso es que la indignación de mi amigo es auténtica. Eso de que dos hombres que se citan a las ocho tengan que reunirse a las ocho, le parece algo completamente absurdo.

Lo lógico, para él, es que se vean media hora, tres cuartos de hora o una hora después.

—Pero fíjese usted bien —le digo—. Una cita es una cosa que tiene que estar tan limitada en el tiempo como en el espacio. ¿Qué diría usted si habiéndose citado conmigo en Puerta del Sol, se enterase de que yo había acudido a la cita en los Cuatro Caminos? Pues eso digo yo de usted cuando, habiéndonos citado a las ocho, veo que usted comparece a las ocho y media. De despreciar el tiempo, desprecie usted también el espacio. Y de respetar el espacio, ¿por qué no guardarle también al tiempo un poco de consideración?

—Pero con esa precisión, con esa exactitud, la vida sería imposible —opina mi amigo. ¿Cómo explicarle que esa exactitud y esa precisión sirven, al contrario, para simplificar la vida? ¿Cómo convencerle de que, acudiendo puntualmente a las citas, se ahorra mucho tiempo para invertirlo en lo que se quiera?

Imposible. El español no acude puntualmente a las citas, no porque considere que el tiempo es una cosa preciosa, sino, al contrario, porque el tiempo no tiene importancia para nadie en España. No somos superiores, somos inferiores al tiempo. No estamos por encima, sino por debajo, de la puntualidad.

1. What is the issue that Camba poses in this essay?
2. Why was Camba incensed at his friend? Why was his friend mad at him in return?
3. Based on the essay, what is the Hispanic world's attitude toward time?
4. How do Camba and his friend view time and respect?
5. How did this essay shape your understanding of time and punctuality in Spanish-speaking countries?

### **Fig. 3 Final Research Project**

#### Proyecto biográfico

¿Qué es lo que tengo que hacer?

1. Read through instructions before starting.
2. Use the provided websites, bibliographical websites, primary sources, and other similarly responsible websites. If the website or its info looks dodgy, it's likely dodgy. At least half of your sources must be Spanish language sources.
3. Select your important figure. You may select any approved person or submit another name to me for approval. Those figures that are already approved are below:
  - a. Sor Juana Inés de la Cruz
  - b. José Martí
  - c. César Chávez
  - d. Frida Kahlo
4. Research your person. You will need to indicate basic biographical information, note their influence on their world and the broader Hispanic world, and add information on their influence on folk culture or popular culture.
5. Research what made your figure potentially controversial. Provide both modern and contemporary criticism of that person if you can. You will also need to determine whether you agree with your person or the criticism against them.
6. Conclude with why and how you think your figure both embodied and helped shape Hispanic culture and thought. Consider the cultural readings we read throughout the semester and remark on any of those readings that you think relate to your figure.
7. Summarize your findings in a paper of no fewer than 700 words. Your introduction and conclusion must be written in Spanish/Castellano, and you must include a bibliography of your English and Spanish language resources.

**General Education Competency  
Communication – Writing  
Rubric**

Criteria	Excellent (4)	Proficient (3)	Adequate (2)	Inadequate (1)
Provides a clear, concise thesis statement.	<ul style="list-style-type: none"> <li>• Statement is clear and concise</li> <li>• Statement is well reasoned</li> <li>• Statement leads to plentiful additional discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Statement is generally clear and concise</li> <li>• Statement is mostly well reasoned</li> <li>• Statement leads to enough additional discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Statement is recognized by the reader</li> <li>• Statement has some elements of reason</li> <li>• Statement leads to some additional discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Statement is not recognized by the reader</li> <li>• Statement is not reasoned</li> <li>• Statement does not lead to additional discussion</li> </ul>
Provides supporting paragraphs which relate to the thesis.	<ul style="list-style-type: none"> <li>• Supporting paragraphs are well reasoned</li> <li>• Supporting paragraphs clearly relate to the thesis</li> <li>• Supporting paragraphs are cohesive and logically developed.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting paragraphs contain mostly well reasoned content</li> <li>• Supporting paragraphs often but not always relate to the thesis</li> <li>• Supporting paragraphs demonstrate some cohesion and development.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting paragraphs contain some well reasoned content</li> <li>• Supporting paragraphs relate to the thesis in some way</li> <li>• Supporting paragraphs demonstrate a few elements of cohesion and development.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting paragraphs do not contain reasoned content</li> <li>• Supporting paragraphs do not relate to the thesis</li> <li>• Supporting paragraphs are neither cohesive nor unified</li> </ul>





## New Mexico General Education Curriculum Course Certification Form

Application Number

2165

### Institution and Course Information

Name of Institution	Mesalands Community College
Chief Academic Officer Name	Joel Kiser
Chief Academic Officer Email	joelk@mesalands.edu
Registrar Name	Brian Bailey
Registrar Email	brianb@mesalands.edu
Department	
Prefix	SPAN
Number	1110
Suffix	
Title	Spanish I
Number of Credits	3

Was this course previously part of the general education curriculum?

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	N/A
Number	N/A
Suffix	N/A
Title	N/A

### New Mexico Common Course information

Prefix	SPAN
Number	1110
Suffix	
Title	Spanish I

### A. Content Area and Essential Skills

To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.

Communications     Mathematics     Science     Social & Behavioral Sciences  
 Humanities     Creative & Fine Arts     Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

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

Student Learning Outcomes

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 sometimes 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.

**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 (~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 skill. 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.*

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

Through class discussions, written assignments, reading-based activities, and cultural research, students will develop critical thinking skills in reading and writing Spanish as well as a cultural awareness of how the Spanish language is used. Using Spanish language resources in text and audio formats, students learn about familiar topics in the target language, memorize a variety of phrases. Students also learn how to react to those phrases and other related stimuli by using written and oral Spanish skills.

For example, some situations to which the students will be introduced will be a passage through a customs check at an airport. These are common situations in which a traveler might find need for Spanish, and the exercises prepare students for those situations. See Fig 1 for a sample assessment.

This assessment fulfills SLOs 1, 2, 3, 4, 5, 6, and 7.

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

Intercultural reasoning and competence in addition to civic discourse are at the heart of any language course, and students in this course use the Spanish language as a vehicle to explore cultural and social justice along with global issues.

One of the attached assessments requires students to read an excerpt of an essay in Spanish regarding the Puerto Rican experience with same-gender couples and respond to the article in writing. This not only requires the student to master the requirements for reading and comprehension, it requires the student to learn about a specific Hispanic culture and issues confronting members of the LGBTQIA+ communities in Latin American cultures. See Fig 2.

This assignment helps students fulfill SLOs 3, 4, 5, 6, and 7.

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

Students learn to be responsible digital citizens and to responsibly use digital research resources by seeking independently authorized information, communicating in the digital realm, and producing and using digital formats, collections, and applications. As part of a final project (See Fig. 3), students will research a predominantly Spanish-speaking nation digitally, using both English- and Spanish-language resources, and create a written report on that nation in a report that meets the requirements for Digital Literacy, Information Structures, and Research as Inquiry. This bilingual research approach will teach students about the target nation, help the student learn how to find hotel, hospital, restaurant, and other necessary resources in a foreign country, and synthesize that information in written format (Fig. 4)

This assignment helps students fulfill SLOs 2, 4, 5, 6, and 7

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

Link to Institution's General Education Assessment Plan	chrome-extension://efaidnbmnnnibpcajpcgicfindmkaj/https://www.mesalands.edu/wp-content/uploads/2020/01/SLAC-Annual-Report-2018-19-Final.pdf
---	---


Fig. 1 Airport Vocabulary

Name: Answer Key Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Vocabulary Words**

# SPANISH

## Airport Words



**Directions :** Match the correct English word with the correct Spanish word.

English	Spanish
1. Reservation	28. Avión
2. Ticket	13. Aeropuerto
3. Boarding	20. Terminal
4. Pilot	11. Equipaje
5. Cockpit	21. Límite de peso
6. Customs	23. Despegue
7. Flight	7. Vuelo
8. Security check	8. Control de seguridad
9. Control tower	22. Puerta de embarque
10. Flight attendant	10. Auxiliar de vuelo
11. Luggage	4. Piloto
12. Suitcase	12. Maleta
13. Airport	2. Boleto
14. Tourist	14. Turista
15. Security guard	16. Porta Ropa
16. Garment bag	15. Guardia
17. Altitude	18. Baños
18. Toilets	19. Bolso de mano
19. Handbag	17. Altitud
20. Terminal	3. Embarque
21. Weight limit	5. Cabina
22. Gate	9. Torre de control
23. Departure	6. Aduana
24. Delay	24. Retraso
25. Exit	25. Salida
26. Entrance	26. Entrada
27. Trip	27. Viaje
28. Airplane	1. Reserva

Fig. 2 Cultural Final Exam sample assessment

Read the short sections below and answer the questions on those prompts.

Passage 1: La diversidad en las familias puertorriqueñas

Cada vez son más las familias en la Isla que no están formadas por un matrimonio

heterosexual y sus hijos e hijas, sino que en cambio tienen al frente a una madre soltera, un hermano mayor, una abuela, un padre adoptivo, una pareja de hombres, una pareja de mujeres, o cualquier otra variante no tradicional.

Según el Censo del 2010, “el 55% de las familias en Puerto Rico no responde al modelo tradicional”, señala Amárilis Pagán Jiménez. La abogada, que prefiere el término “familia diversa” en lugar de familia no tradicional, añadió que los números del Censo revelan todavía más: “El 65% de los niños y niñas que nacen en Puerto Rico hoy día nacen fuera de matrimonio legales”, que es el modelo reconocido como la familia tradicional. “La familia de papá y mamá con hijos, basada en una primera nupcial, es la minoría”, dice el trabajador social Larry Alicea.

Las razones detrás de esa transformación son variadas, según explicó el psicólogo social comunitario David Pérez Jiménez. “Es un hecho innegable... el reconocimiento en la sociedad contemporánea puertorriqueña de la familia no tradicional, y es algo que [empezó hace] 20 o 30 años”, dijo Pérez Jiménez, recordando que un cambio importante llegó al pasar del modelo tradicional agrario a la industrialización, que significó que el hombre tuviera que pasar más tiempo trabajando fuera de casa, y también supuso una ola migratoria hacia las ciudades y fuera de Puerto Rico.

Luego está el avance profesional de la mujer. “Cada vez son más las mujeres profesionales, educadas, que no toleran la violencia, o que a veces deciden criar hijos solas”, señaló Pérez Jiménez. “Y en épocas más recientes, ya por lo menos está la discusión, si no aceptación por completo, de las familias de lesbianas y gays, que viene atado al reconocimiento de más derechos” añadió Pérez Jiménez.

Amárilis Pagán Jiménez lamentó que “en la medida que las políticas públicas se empecinen en hablar de familia tradicional están discriminando a la mayoría”. Para Alicea, urge “reeducar a la sociedad” y que “en las escuelas se empiece a hablar de eso (la familia diversa) porque la mayoría de los niños no se identifica con mamá y papá, cuando su realidad es otra, es mamá y padrastro, o papá y madrastra, o hermana, abuela, o papá y papá, o mamá y mamá. No se puede reducir a mamá y papá heterosexual porque les dices a todos esos niños que no viven en familia que no tienen familia.”

Aunque Pérez Jiménez admite que “La sociedad puertorriqueña es sumamente conservadora y hay sectores que se van a resistir, por intereses o por creencias religiosas. Así que hablar de nuevas familias aún encuentra resistencia. Pero hay más apertura, y la gente ve la evidencia ante sus ojos, la gente lo ve en sus vecinos, ven una pareja gay y sus hijos son ejemplares”.

I. Keyword Recognition. Find in the article the Spanish word or phrase that best expresses the meaning of each of the following English words/phrases. Then write the corresponding word in *Spanish* next to the words below. (2 points each, 20pts)

1. Puerto Rican:
2. Traditional:
3. Diversity:

4. Marriage:
5. Minority:
6. Society:
7. Single mother (2 words):
8. Stepfather:
9. Neighbors:
10. Conservative:

### **Fig. 3 Final Research Project**

#### Proyecto sobre un país

¿Qué es lo que tengo que hacer?

1. Read through instructions before starting.
2. Use the provided websites and other similarly responsible websites. If the website or its info looks dodgy, it's likely dodgy.
3. Select your Spanish-speaking country. You can find info on Spanish-speaking countries here: <https://www.worldatlas.com/articles/spanish-speaking-countries.html>
4. Research your country. Note the major airports, cities, industries, tourist areas, currency, and other major facets of life there.
5. Research an imaginary vacation to your country. Select a city, cite the cost of airfare there, major hotels, restaurants, tourist destinations, and anything else you might be interested in seeing if you were to go. At least two of the sources you utilize must be Spanish-language sources.
6. Also research places of need if you run into trouble. Look at the nearest embassy or consulate, hospitals, clinics, bank branches, police stations, etc. Include details from at least two Spanish-language resources in your target area.
7. Imagine a significant emergency like being robbed and losing your passport and credit cards, or getting injured and requiring medical attention. Look up the relevant vocabulary you would require in order to get help with your hypothetical emergency.
8. Summarize your findings in a paper of no fewer than 900 words. Include the cultural and travel information you researched, including a full summary of your hypothetical trip, your emergency vocabulary, and a bibliography of your English and Spanish language websites.





**General Education Competency  
Communication – Writing  
Rubric**

Criteria	Excellent (4)	Proficient (3)	Adequate (2)	Inadequate (1)
Provides a clear, concise thesis statement.	<ul style="list-style-type: none"> <li>• Statement is clear and concise</li> <li>• Statement is well reasoned</li> <li>• Statement leads to plentiful additional discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Statement is generally clear and concise</li> <li>• Statement is mostly well reasoned</li> <li>• Statement leads to enough additional discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Statement is recognized by the reader</li> <li>• Statement has some elements of reason</li> <li>• Statement leads to some additional discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Statement is not recognized by the reader</li> <li>• Statement is not reasoned</li> <li>• Statement does not lead to additional discussion</li> </ul>
Provides supporting paragraphs which relate to the thesis.	<ul style="list-style-type: none"> <li>• Supporting paragraphs are well reasoned</li> <li>• Supporting paragraphs clearly relate to the thesis</li> <li>• Supporting paragraphs are cohesive and logically developed.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting paragraphs contain mostly well reasoned content</li> <li>• Supporting paragraphs often but not always relate to the thesis</li> <li>• Supporting paragraphs demonstrate some cohesion and development.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting paragraphs contain some well reasoned content</li> <li>• Supporting paragraphs relate to the thesis in some way</li> <li>• Supporting paragraphs demonstrate a few elements of cohesion and development.</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting paragraphs do not contain reasoned content</li> <li>• Supporting paragraphs do not relate to the thesis</li> <li>• Supporting paragraphs are neither cohesive nor unified</li> </ul>



## New Mexico General Education Curriculum Course Certification Form

Application Number

2218

### Institution and Course Information

Name of Institution	NNMC
Chief Academic Officer Name	Larry Guerrero
Chief Academic Officer Email	Larry.guerrero@nnmc.edu
Registrar Name	Janice Baca
Registrar Email	janice.baca@nnmc.edu
Department	Arts & Human Sciences
Prefix	HIST
Number	1150
Suffix	
Title	Western Civilization I
Number of Credits	3

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	n/a
Number	n/a
Suffix	n/a
Title	n/a

### New Mexico Common Course information

Prefix	HIST
Number	1150
Suffix	n/a
Title	Western Civilization I

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

- Communications       Mathematics       Science       Social & Behavioral Sciences  
 Humanities       Creative & Fine Arts       Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

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 14

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 (~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 skill. 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.*

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

Students will distinguish between different approaches historians use, as discussed in text and class, to evaluate (individually and comparatively) types/forms of cities in the development of civilizations. Students learn, through readings, writing assignments, and class discussion, to understand and differentiate source types as provided within texts or as handouts. In both written exercises and examinations, making use of primary and secondary sources, provided in the text and as handouts, students will explain how the impact of city formation and development shaped the foundations of the western and modern worlds. Through the various class assessments, identified in the syllabus, students develop and engage in historical inquiry, research and analysis through evaluation of sources, perspectives, and credibility to create well-crafted arguments that demonstrate an awareness of historical material and context. See mid semester assignment attached.

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

Students will make connections between cities in the past and to those of the present – utilizing their own place of domicile or the nearest city of familiarity. Recognize and identify, through ethical reasoning, those specific elements of city development and how those elements intersect their own personal, social, and cultural engagement. In the attached assignment, students extrapolate to understand “Both the advantages ... as well as problems to be overcome”) Students engage in civic discourse recognize and assess specific issues related to their supportive understanding of multiple perspectives of city development. Through course assessments identified in the syllabus and class discussions, students understand and articulate the complex nature of historical records to generate open-ended questions about the past. Students will demonstrate the ability to present and engage a diversity of viewpoints both within class peer-to-peer engagement in a civil and constructive fashion which reflects deliberation contributing to social dialogue. The assessment of dialogue consists of participatory class engagement of their own research related to assigned writing and oral exercises.

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

Engage in a process of inquiry through iterative, comparative, and evaluative methods to develop an argumentative thesis followed by supportive use of evidentiary material drawn from both library and on-line data bases. Utilize written and online source material as supporting evidence leading reader from argument to logically developed conclusion. Understand and articulate the importance of such evidence to the correlation of modern cities to those of the past.

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

Link to Institution's General Education Assessment Plan	<a href="https://nnmc.libguides.com/ld.php?content_id=61525826">https://nnmc.libguides.com/ld.php?content_id=61525826</a>
---	---

## Formal Paper Assignment #1B

**Due in accordance with the due date in the syllabus and in BB posting.**

### **Paper Requirements**

1. This is a formal paper assignment. Your grade will be based on three criteria:
  - a. Quality of prose
  - b. Use of sources (especially texts and primary documents)
  - c. Adherence to guidelines (see # 2 - #7)
2. Length ~5-7 pages
3. Paper format conforms to *MLA Guidelines* (so 1" margins, double-spaced, heading at top, 12 font, etc.). Review my syllabus for guide to how I'm grading this.
4. Citations for material referenced are MLA style, see [A Writer's Resource](#) for more details.
5. Don't forget to review comments on individual writing assignments to preclude making similar errors.
6. **I expect you will use the full range of materials in your possession which means quotes from Outlines/Syllabus; Spielvogel's narrative; and primary source documents embedded in each of the chapters.**
7. Supporting evidence in the form of citations/quotations from both primary sources within your text and the text itself.
8. Remember the themes of the course and elements of civilization and incorporate appropriately.
9. The time period (chapters 1-6) covers from the Mesopotamian era (6000BCE) to the end of the Roman empire (approximately 400CE)

Cities, more than any other factor, powered the rise and development of civilization, and made possible most of the key developments in western and world history. The Greeks (copied by the Romans) more than the early civilizations (Assyrian, Babylonian, Akkadian, et al.) expanded the concept of the polis to the metropolis and even to the megalopolis (or Spielvogel's identification of the "cosmopolis"). All of which we see in today's global environment regardless of culture or location.

This longer paper (approximately 5-7 pages – see above) focuses on the development of the city from small isolated villages and towns (of chapter 1) to the more glorious city-states of Athens and Rome where Pericles's Athens became (like Augustus's Rome) the height of brilliance.

Trace the evolution of cities and why cities became, according to Spielvogel, one of, if not the most important characteristic of a civilization. **What is it about cities that make them key to civilizations?** And from my perspective, allowed complex societies to appear – and for human progress to take place at an ever-increasing pace, despite (or because of) the inherent difficulties found in cities.

In your discussion ensure you make the connection (in intro) of Theme, element of civilization, and concept of city leading to an argumentative thesis (something to be proven). IN your body paragraphs, deal with BOTH the advantages of cities (using evidence (see item 6 above) as well as problems to be overcome (here you get into concept of progressive reforms).

## **RUBRIC FOR CLASS ASSIGNMENTS/ASSESSMENTS**

**EXAMS:** Examinations are of the "mixed type," combining true/false, multiple choice, short answer (less than a paragraph), longer answer (paragraph), and essay (page to page and a half). Responses other than multiple choice require supporting evidence in the format of the established class guidelines.

**NOTE: Grading on examinations consists of 50% for the correct answer and 50% for germane supporting evidence.**

**PAPERS:** All written material must be typed double-spaced and with 1 ½" left margin, 1" margins top/bottom/right. The writing must comply with Department of History standards. I most strongly recommend you acquire a writing guide/handbook. I evaluate the papers for content, grammar, and historical accuracy. You **must** make extensive use of the primary source documents provided as well as make connections of those documents to the text assignments. The best way to ensure you have a presentable paper is to conduct both spell and grammar check and have at least one peer read your paper, preferably aloud so you can hear your errors. EVERY writing assignment **MUST** begin with the correlation of the "element of civilization" as presented by the author and the Theme of the prompt as noted in the Thematic Sheet (attached to syllabus) The quality of your papers falls into and between four categories: Superior, Excellent, Good, and Poor.

**Superior (A/A-):** Paper is historically accurate with main ideas supported by facts. The paper has a clear thesis, original/thoughtful interpretation and demonstrates significant knowledge of the topic. This paper also exhibits creative and integrative use of wide-ranging sources that advance the thesis and analysis. Finally, this paper exhibits a balance between interpretations.

**Excellent (B+/B/B-):** The main ideas have factual support but can be improved with more evidence (especially primary sources). The thesis is present, but not clearly stated. This paper presents more description than argumentative analysis. The author uses a variety of sources to support the thesis but provides little analysis of the supporting material. Finally, this paper inordinately selects one position over another with little convincing evidence or analysis.

**Good (C+/C/C-):** Little evidentiary material to support thesis. The paper has a focus but no clear thesis. The work is essentially non-specific in that there is little analysis and factual material to support a position. Source material is not diverse, too much emphasis on one type of resource. The paper only presents one point of view when it is obvious that others exist.

**Poor (D/F):** You obviously did not do the reading or take appropriate notes in class. There is no thesis, no specifics, no germane quotes or citations.



## New Mexico General Education Curriculum Course Certification Form

Application Number

2219

### Institution and Course Information

Name of Institution	NNMC
Chief Academic Officer Name	Larry Guerrero
Chief Academic Officer Email	Larry.guerrero@nnmc.edu
Registrar Name	Janice Baca
Registrar Email	janice.baca@nnmc.edu
Department	Arts & Human Sciences
Prefix	HIST
Number	1160
Suffix	
Title	Western Civilization II
Number of Credits	3

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	n/a
Number	n/a
Suffix	n/a
Title	n/a

### New Mexico Common Course information

Prefix	HIST
Number	1160
Suffix	n/a
Title	Western Civilization II

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

- Communications       Mathematics       Science       Social & Behavioral Sciences  
 Humanities       Creative & Fine Arts       Flex



**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

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

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 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

**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 (~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 skill. 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.*

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

Through class discussions/instruction and readings from the text and/or handouts, students learn to distinguish between different approaches historians use to evaluate (individually and comparatively) types/forms of cities in the development and expansion of civilizations. Students, utilizing a variety of source materials, learn and articulate through class discussions and writing assignments, to understand and differentiate source types. Students then acquire the ability to articulate and explain, through classroom exchanges and directed writing assignments, specific problem areas or issues of concern which face the Western world and global society and how those issues/problems, have an impact on the creation of new models of civilizational development (differentiated from those in WCiv I or at beginning of semester of WCiv II) for the future. Through assessments identified in the syllabus and on individual writing assignments, students develop and engage in historical inquiry, research and analysis through evaluation and use of sources, perspectives, and identify challenges of credibility. Students will understand perspectives presented to evaluate the optimistic/pessimistic differences developing an awareness of their own surrounding and perspective. See end of semester assignment attached.

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

Students will make connections between problem/social issue areas of the modern world (Western Civilization II) as well as observing the connection between the Western world and global community – utilizing their own place within the Western world. Students, through directed writing assignments, learn to recognize and identify, through ethical reasoning, as discussed in classroom lectures and engagement, those specific problems/issue areas of concern and how those elements intersect their own personal, social, and cultural engagement within a diverse community . (Pascal’s reading in syllabus). In the attached assignment, students extrapolate to understand “Both the advantages ... as well as problems to be overcome”) within more modern societies of Western Civilization. Students engaging in civic discourse recognize and assess specific issues related to their supportive understanding of multiple perspectives of what the author of the text considers “New Directions and New Problems” of the post-modern world. Students, through classroom exercises as identified in the syllabus learn to understand and articulate the complex nature of historical records and ongoing debates to generate their own open-ended questions about the past and future of Western Civilization. Through those same classroom discussions and written assignments, students demonstrate the ability to present and engage a diversity of viewpoints within class peer-to-peer engagement in a civil and constructive fashion which reflects deliberation contributing to social dialogue. (the assessment of dialogue consists of participatory class engagement of their own research related to attached assignment/assessment). Students then learn to explicate the sustainability argument in conclusionary sections of their assignments/assessments to individualize their own responsibility to create those new models of the future.

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

Students engage, through classroom instruction/discourse and a series of progressive writing assignments, in a process of inquiry through iterative, comparative, and evaluative methods to develop an argumentative thesis followed by supportive use of evidentiary material drawn from both library and on-line databases and instructor provided handouts. Students utilize written and online source material as supporting evidence leading reader from argument to logically developed conclusion. Through classroom peer-to-peer engagement and presentations, students learn to understand and articulate the importance of evidentiary material to the correlation of modern problems/social issues to those of the past and to recognize and articulate the interconnectedness of Western world to global (and vice versa) problems through more recent online source material.

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

Link to Institution's General Education Assessment Plan

[https://nnmc.libguides.com/ld.php?content\\_id=61525826](https://nnmc.libguides.com/ld.php?content_id=61525826)

**Western Civilization II**  
**Formal Paper Assignment 2A**  
**Due date/time:**

**Paper Requirements**

1. This is a short paper assignment. Your grade will be based on three criteria:
  - a. Quality of prose
  - b. Use of sources (**especially texts and primary documents**)
    - 1) You should have quotes from the secondary source – the text.
    - 2) You should also have quotes from the available primary sources found within the text (those blocks of information within the chapters) or provided as handouts. Do not use internet or outside sources, all the material is from the text or what I provide in class.
    - 3) NO WIKIPEDIA!!!
  - c. Adherence to guidelines (see # 2 - #8)
2. Length of ~5-7 pages, typed, double-spaced, 12 Font.
3. Citations for material referenced are MLA style, see A Writer's Resource for more details.
4. Don't forget to review comments on individual writing assignments to preclude making similar errors. Read and incorporate both recommendations and admonitions.
5. I expect you will use the full range of materials in your possession, most especially the primary sources.
6. Remember the themes of the course and incorporate appropriately.
7. Ensure you explicate terms in intro (with quotes) leading to **argumentative** thesis.
8. Don't forget my no late policy.

By the end of Chapter 27 the world witnessed TWO global conflicts and an anxious inter-war period (what Spielvogel describes as “The Futile Search for Stability”) bringing to the forefront the very essence of liberalism (Spielvogel 848), Enlightenment thinking, and the core of Scientific Revolution methods (see the primary source by Huzinga (Spielvogel, 818)). Spielvogel concludes chapter 27 with “Much of European civilization lay in ruins, and the old Europe had disappeared forever” (884). Spielvogel addresses a number of “New Directions and New Problems” for your generation in Chapter 30.

**In what ways were these perspectives (identified above) correct? In your assessment, address the quote (Spielvogel, 884). How can one see that quote as optimistic vice pessimistic? Spielvogel addresses that many issues “afflicting the Western world have also become global problems” (979). Pascal, in the beginning of our semester readings, stressed an awareness of our surrounding (with all its problems) – review his “What is man in the infinite” (on BB). How would you make use of Pascal's ideas to take on your own social responsibilities to “helping us create new models for the future” (Spielvogel 978)?**

## **RUBRIC FOR CLASS ASSIGNMENTS/ASSESSMENTS**

**EXAMS:** Examinations are of the "mixed type," combining true/false, multiple choice, short answer (less than a paragraph), longer answer (paragraph), and essay (page to page and a half). Responses other than multiple choice require supporting evidence in the format of the established class guidelines.

**NOTE: Grading on examinations consists of 50% for the correct answer and 50% for germane supporting evidence.**

**PAPERS:** All written material must be typed double-spaced and with 1 ½" left margin, 1" margins top/bottom/right. The writing must comply with Department of History standards. I most strongly recommend you acquire a writing guide/handbook. I evaluate the papers for content, grammar, and historical accuracy. You **must** make extensive use of the primary source documents provided as well as make connections of those documents to the text assignments. The best way to ensure you have a presentable paper is to conduct both spell and grammar check and have at least one peer read your paper, preferably aloud so you can hear your errors. EVERY writing assignment MUST begin with the correlation of the "element of civilization" as presented by the author and the Theme of the prompt as noted in the Thematic Sheet (attached to syllabus) The quality of your papers falls into and between four categories: Superior, Excellent, Good, and Poor.

**Superior (A/A-):** Paper is historically accurate with main ideas supported by facts. The paper has a clear thesis, original/thoughtful interpretation and demonstrates significant knowledge of the topic. This paper also exhibits creative and integrative use of wide-ranging sources that advance the thesis and analysis. Finally, this paper exhibits a balance between interpretations.

**Excellent (B+/B/B-):** The main ideas have factual support but can be improved with more evidence (especially primary sources). The thesis is present, but not clearly stated. This paper presents more description than argumentative analysis. The author uses a variety of sources to support the thesis but provides little analysis of the supporting material. Finally, this paper inordinately selects one position over another with little convincing evidence or analysis.

**Good (C+/C/C-):** Little evidentiary material to support thesis. The paper has a focus but no clear thesis. The work is essentially non-specific in that there is little analysis and factual material to support a position. Source material is not diverse, too much emphasis on one type of resource. The paper only presents one point of view when it is obvious that others exist.

**Poor (D/F):** You obviously did not do the reading or take appropriate notes in class. There is no thesis, no specifics, no germane quotes or citations.



## New Mexico General Education Curriculum Course Certification Form

Application Number

2345

### Institution and Course Information

Name of Institution	Luna Community College
Chief Academic Officer Name	Karen Torres
Chief Academic Officer Email	ktorres@luna.edu
Registrar Name	Alicia Chacon
Registrar Email	achacon@luna.edu
Department	Business
Prefix	ECON
Number	2110
Suffix	
Title	Macroeconomics
Number of Credits	3

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	n/a
Number	n/a
Suffix	n/a
Title	n/a

### New Mexico Common Course information

Prefix	ECON
Number	2110
Suffix	
Title	Macroeconomics

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

Communications     
  Mathematics     
  Science     
  Social & Behavioral Sciences  
 Humanities     
  Creative & Fine Arts     
  Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

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

1. Explain the concepts of opportunity cost, comparative advantage and exchange.
2. 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.
3. Explain the circular flow model and use the concepts of aggregate demand and aggregate supply to analyze the response of the economy to disturbances.
4. Explain the concepts of gross domestic product, inflation and unemployment and how they are measured.
5. Describe the determinants of the demand for money, the supply of money and interest rates and the role of financial institutions in the economy.
6. Define fiscal policy and monetary policies and how these affect the economy.
7. Students will be able to identify the causes of prosperity, growth, and economic change over time and explain the mechanisms through which these causes operate in the economy.

**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 (~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 skill. 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.*

This course includes in-class discussions aimed at testing students' communication skills. These discussions involve questions that require students to apply concepts learned in class to various scenarios. Some questions are based on economic statistical analysis, while others focus on ethical and societal norms, encouraging students to evaluate and construct arguments. Students participate in no less than 6 discussions, which require students to evaluate economic issues, formulate a response and discuss with other students in the class. Some questions, particularly those based on ethical or societal issues, do not have a right or wrong answer and are designed to encourage debate and discussion. For example, a question about inflation may lead to a broader discussion on policies enacted by governments and how they can affect inflation.

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

Macroeconomics supports the achievement of Critical Thinking outcomes by providing students with the opportunity to identify, define, evaluate large-scale economic issues like inflation, unemployment, and economic growth. Macroeconomics involves gathering data such as GDP, inflation rates, and unemployment figures. Students are taught how to find and interpret this information to get a better understanding of economic trends or policy effects. Once students have data, they need to critically analyze it, looking at trends, and compare different time periods. This helps them make sense of economic indicators and the potential impact of policies. After analyzing the evidence, students use logical reasoning to draw conclusions. Students are assessed using four separate multiple choice exams that require knowledge in theory, but also in calculating results using different formulas and quantitative analysis, they also require being able to interpret economic data through visualizations.

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

Macroeconomics ties into Personal & Social Responsibility by helping students understand how economic issues impact both individuals and society. Macroeconomics involves understanding global economics, like trade, global issues that can affect the world economy, and other relevant economic topics. This course also deals with what is called human capital and how important the human factor is in the economy. Students also discuss ethical questions in economics by examining the moral side of economic decisions and policies. Since solving economic problems often requires cooperation between governments, businesses, and communities, students gain an appreciation for the role of collaboration in addressing issues like inflation, unemployment, and economic growth. Students are assessed by online discussion board conversations with other students which require them to respond to their fellow students. Students are also assessed through homework assignments that require students to work through different economic and social problems and come to an ethical conclusion.

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

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

Link to Institution's General Education Assessment Plan

[https://luna.edu/academic\\_assessment](https://luna.edu/academic_assessment)



Instructor: Aaron Smith

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### **Germany's Unemployment Solution - Understanding Worker Incentives**

**Read the following article, which discusses the role incentives play on the unemployment rate. Then answer the questions that follow.**

Although the unemployment rate is not a perfect measure (failing to account for potential increases in discouraged or underemployed workers), it remains a key indicator of a nation's economic health. While Germany now enjoys a healthy unemployment rate of only 3.6% as of December 2017, the labor market has not always been booming in this European country. For example, as recently as 2005, German unemployment accounted for nearly 10% of the labor force.

There are many factors that contributed to the turnaround of Germany's labor market over the last decade, including wage decentralization and increased competitiveness according to an article from the Harvard Business Review (Alexandra Spitz-Oener, "The Real Reason the German Labor Market Is Booming," March 13, 2017). However, one of the most well-known policy changes of the early 21st century was the Hartz reforms, which included a sharp decrease in unemployment benefits that altered the incentives of unemployed workers. Before the enactment of the reforms, eligible Germans received 60% to 67% of their previous net salaries for 12 to 36 months, after which period they continued to receive 53% to 57%. After the reforms were enacted in 2005, the full unemployment benefits (60% to 67%) were only available for a year (or 18 months for those over 55); after that, the benefits decreased sharply, and claimants were forced to agree to a contract requiring them to take steps toward finding a job.

This tightening of unemployment benefits encouraged the unemployed to find jobs by making long-term unemployment an unattractive option. While the cost to those who remained unemployed must be weighed against the overall benefit to the economy, this example illustrates how people respond to changes in incentives.

**1. According to the article, prior to 2005, an unemployed person in Germany who had been earning a net salary of €65,000 per year would receive up to \_\_\_\_\_ per year in unemployment benefits after the period of receiving full benefits ended.**

### **2. Utility maximization - Trading off labor and leisure**

The indifference curves on the following graph show Dina's preferences for leisure and consumption for increasing levels of utility, such that her utility increases in both consumption and

*previous graph when she consumes \$350 per week and has 100 hours of leisure.*

Suppose that after a month of being unemployed, Dina's friend Charles suggests that she apply for a job at his company, where she could earn her previous salary again by working 50 hours per week.

True or False: Because Dina is on a higher indifference curve while receiving unemployment benefits than she was when she was employed, she would be better off working at her friend's company than she is remaining unemployed.

True

False

*On the previous graph, use the green point (triangle symbol) to indicate the minimum weekly salary (an equivalent bundle) that would make Dina as well off working 50 hours per week as she is when unemployed and collecting \$350 in benefits.*

Now, suppose that the government enacts reforms that reduce unemployment compensation to \$200 per week for Dina.

*On the previous graph, use the orange point (square symbol) to represent Dina's new leisure/consumption bundle when she consumes \$200 per week and has 100 hours of leisure. Then use the blue point (circle symbol) to indicate the minimum weekly salary (an equivalent bundle) that would make Dina as well off working 50 hours per week as she is when unemployed and collecting only \$200 in benefits.*

*Complete the following table by entering the minimum weekly salary that would make Dina*

· unemployment rate in Germany. Could other nations enact similar reforms and expect to see comparable changes in the state of their economy? Why or why not?

3

What would you expect to happen to the amount of time people are unemployed if the number of weeks they can collect unemployment benefits is decreased? How is this effect similar to or different from decreasing the monthly benefits?



## New Mexico General Education Curriculum Course Certification Form

Application Number

2372

### Institution and Course Information

Name of Institution	NMSU
Chief Academic Officer Name	Lakshmi Reddi
Chief Academic Officer Email	provost@nmsu.edu
Registrar Name	Gabrielle Martinez
Registrar Email	gdmart@nmsu.edu
Department	Borderlands and Ethnic Studies Department
Prefix	BEST
Number	2750
Suffix	
Title	Introduction to Palestine Studies: History, Land, Resistance, and Justice
Number of Credits	3

Was this course previously part of the general education curriculum?

Yes  No

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

Yes  No

### Co-Requisite Course Information

Prefix	n/a
Number	
Suffix	
Title	

### New Mexico Common Course information

Prefix	BEST
Number	2750
Suffix	
Title	Introduction to Palestine Studies: History, Land, Resistance, and Justice (submitted 9/2024)

### A. Content Area and Essential Skills

To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.

Communications   
  Mathematics   
  Science   
  Social & Behavioral Sciences  
 Humanities   
  Creative & Fine Arts   
  Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

- 1 Identify key major significant: (a) Events in the history of Palestine (historicize) and in the contemporary context inside Palestine and in the diaspora (contextualize); (b) Moments of solidarity with other global intersectional liberation struggles against settler colonialism (the indivisibility of justice).
- 2 Apply key concepts, theories, and approaches/methodologies in Palestinian Studies and Critical Ethnic Studies to critically assess: (a) Historical and contemporary consequences on Palestine as indigenous land and Palestinians as indigenous people. (b) Settler-colonialism, racism, and heteronormativity in the case of Palestine. (c) Implication of Zionist settler-colonialism and global settler-colonial powers' complicities/alliances and logics/tactics that maintain the occupation of Palestine and the displacement, dispossession, and incremental ethnic cleansing of Palestinians and their struggles in the diaspora. (d) Material presented by contemporary US media outlets.

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 (~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 skill. 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.*

I. This course equips students with key communication skills by engaging them in diverse genres and mediums. Students will create weekly written reflections on readings, collaborate in teaching course materials, develop podcast episodes on weekly themes, and present individual and group projects through visual media such as murals, videos, and photography. These tasks ensure students develop Genre and Medium Awareness, Application, and Versatility, as they practice adapting their communication strategies to different contexts and audiences. Artistic and audio creations as assignments become part of a student archive.

II. Students will also employ Strategies for Understanding and Evaluating Messages by critically analyzing course content through media literacy tools, equity lenses, and the integration of their own lived experiences. These strategies help them deconstruct media representations and examine societal narratives with depth and nuance. Students, for example, are guided in comparing mainstream media content on global wars to place-based, grass-roots journalism in English and other languages.

III. Finally, through the Evaluation and Production of Arguments, students will synthesize their knowledge by formulating place-based arguments. Using critical communication tools, they will develop and present well-reasoned arguments advocating for social transformation. This blend of critical analysis and creative production prepares students to engage in meaningful dialogue about societal structures and contribute to change through various communicative platforms. Students, for example, produce podcasts and measure the impact of those productions on groups of peer students in their programs.

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

I. Problem Solving. Through assigned readings and a sequence of assignments, students are provided questions requiring critical inquiry and analysis. Students are required to address social issues related to the Palestinian experience and to formulate and support arguments in response to related research questions.

II. Evidence Acquisition. A central component of all written- and project-based assignments is requires secondary source research. Students will engage in library- and web-based research.

III. Evidence Evaluation. Assignments will integrate the practice of rhetorical evaluation of sources: Students will evaluate secondary sources with attention to authorship, publication venue, strategies of audience engagement, and effective organization, integration of sources, and style.

IV. Reasoning/conclusion. Students will practice strategies of critical reading, writing, and project creation. To complete assignments successfully, students will synthesize assigned reading materials, secondary source research, and critical analysis.

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

I. Intercultural reasoning and intercultural competence

Intercultural reasoning and competence is meant to support effective and appropriate interaction in a variety of cultural contexts. This course provides an introduction to Palestine Studies and Zionist settler colonialism which helps students to understand and begin to articulate the contours of history and cultural contexts of colonized Palestinians. By doing so it helps students navigate and understand the importance of historicizing and contextualizing Palestinian experiences of displacement and disposition over one hundred years.

V. Civic discourse, civic knowledge and engagement – local and global

Civic knowledge and engagement include instruction on civic values, processes of government, political ideologies, civic and constitutional rights, and civic dispositions. This class explores local and global dimensions of civic discourse

and engagement by understanding the ways social forces located in civic knowledge and engagement have at times contributed to reinforcing and unraveling social constructedness of race and racial relations throughout the world.

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

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

Link to Institution's General Education Assessment Plan

<https://gened.nmsu.edu/recertification-and-assessment/Institutional-GE-Assessment-Plan.pdf>

Introduction to Palestine Studies I: History, Land, Resistance and Justice  
BEST 2xxxG/5xxx

**Sample Assignment**

Week #1 Reading/Writing Assignment:

**Read:** Part One (Chapters Intro-5) of

Masalha, Nur (2018). Palestine: A Four Thousand Year History. Zed Books. ISBN-10: 1786992728. ISBN-13: 978-1786992727.

Part One

This is a timed and two-part assignment.

First Part:

By Tuesday midnight, you should submit your own entry in response to the specifics of the prompt corresponding with each of the weekly readings. This first part of the assignment should reflect how you:

- Drawing on Masalha (2018):
  - TWO major tenets/ideas/claims of Masalha's discussion of Arab Christian Palestine (100-200 words)
  - How did this discussion challenge your understanding of Christianity, Arabs, and Palestine (200-400 words)

You are expected to cite and reference the readings per APA or MLA.

I advise you to type your entry OFFLINE on a savable word document before you paste it into a Canvas message.

Second Part:

By Thursday, for further unpacking, expanding, critiquing, and applying the weekly readings, you are expected to engage with one of your peers' posting this week by discussing two more quotes that expand their posting (200-400 words).





## New Mexico General Education Curriculum Course Certification Form

Application Number 2373

### Institution and Course Information

Name of Institution	NMMI
Chief Academic Officer Name	Orlando Griego
Chief Academic Officer Email	OGriego@nmmi.edu
Registrar Name	Nekeya Bertrand
Registrar Email	bertrand@nmmi.edu
Department	Math and Science Division
Prefix	BIOL
Number	2610
Suffix	
Title	Principles of Biology: Biodiversity, Ecology, and Evolution
Number of Credits	4

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	BIOL
Number	2610L
Suffix	
Title	Principles of Biology: Biodiversity, Ecology, and Evolution lab

### New Mexico Common Course information

Prefix	BIOL
Number	2610
Suffix	
Title	Principles of Biology: Biodiversity, Ecology, and Evolution

### A. Content Area and Essential Skills

**To which content area should this course be added?** Indicate "Other" if the course is not associated with one of the six NM General Education content areas.

- Communications     Mathematics     Science     Social & Behavioral Sciences  
 Humanities     Creative & Fine Arts     Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

Student Learning Outcomes:

1. Apply 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 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.

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

Same as CCNs

**C. Narrative**

In the boxes provided, write a short (~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 skill. 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.*

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

Students in this course will use the scientific method as a problem solving tool. Experiments and hands-on projects will be conducted weekly to assess all aspects of critical thinking.

1. Problem setting: Students will use the scientific method to identify problems and gather background information on various scientific topics. The problem solving pathway should include research questions like who, what, where, when, why and how is the problem occurring. After the problem has been identified, students will develop a hypothesis to test in a laboratory experiment.

2. Evidence Acquisition and Evidence Evaluation: Each week the students will be given a lab sheet to fill out for a grade. Students will gather materials and follow the scientific method to acquire data to analyze. Throughout this course, the evidence will be acquired from viewing samples of organisms, weighing objects using a scale, viewing change in samples over time, calculating probability, measuring distance changes, allele frequencies & genetic drift, and more. After completing this portion of the laboratory, students will be asked to evaluate the data. The lab group will form a discussion and cadets will be asked to write their evaluations in a laboratory report. Students should evaluate their hypothesis, and compare it to the evidence acquired in the lab.

3. Reasoning/Conclusion: Students will be asked to discuss and type a conclusion for each laboratory experiment. The conclusion is a chance to evaluate the entire laboratory process. This is also a good time for the students to recognize mistakes and future problems that could be researched. Students should use sound reasoning and judgement for why the results occurred in the laboratory.

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

This course will provide students plenty of chances to process quantitative data acquired from experimentation.

1. Communication/Representation of Quantitative Information: Students in this course will build at least one scientific poster and/or written report that includes quantitative data. The student may be asked to present this poster to the class, or take it to a scientific conference for discussion. Ideas will be expressed both symbolically and graphically. Students should be able to communicate the entire scientific process and discuss the data gathered from laboratory experimentation. This communication can be written in a laboratory report or given as an oral speech.

2. Analysis of Quantitative Arguments: Students should be able to back up their laboratory analysis with a constructive argument and statistical inference. Corrections will be made, and/or experiments repeated if an error occurred. Data will be calculated, critiqued, and reported. Students should be able to defend their data and conclusions reached near the end of a project.

3. Application of Quantitative Models: Students will be asked to create scientific graphs of quantitative data. Trends may easily be seen and studied with this approach. Students will use Microsoft Excel to build the model/graph. Each axis must be properly labeled and a college level title included.

**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 biological sciences course, students will need to use intercultural reasoning and ethical reasoning for understanding past/present/future scientific advancements.

Sustainability:

☐ The natural and human worlds will be studied in this course. Students will be given the freedom to express their cultural beliefs and values on topics such as evolution and natural selection.

☒ If animal specimens are dissected, they will be acquired and treated with ethical scientific standards. When possible, models will be studied to promote sustainability of living organisms.

☒ Environmental impacts, socio-cultural interactions, political and economic factors may be discussed as they relate to this Biology course.

**Collaboration**

☒ Teamwork will be a necessary factor for all laboratory sections. Students will work in groups of two or three to complete the labs. Group work will promote collaboration skills and communication. When possible, field trips will be taken to promote civic engagement within our local area and state of New Mexico. When possible, guest lectures may be brought in to inspire future career options and knowledge from local businesses or organizations as they relate to Biology.

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

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

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/wp-content/uploads/2022/11/ACADEMIC-ASSESSMENT-PLAN.pdf>

## NMMI Syllabus

Semester: Spring

Year: 2024

### Course number:

BIOL 2610 Principles of Biology: Biodiversity, Ecology, and Evolution

### Meeting days, times, and places:

Section 02 (MWF 910-1000)

Section 06 (MWF 1345-1435)

Willson Hall 017

**Teacher Name:** MAJ Staci Saiz

**Email:** [staci@nmmi.edu](mailto:staci@nmmi.edu)

**Phone:** 575-624-8152 ext

8175

**Office hours & Location:** Willson 007 Tutoring 0715-0810 and M-F 7<sup>th</sup> period

**Course Description:** This course is an introduction to the dynamic processes of living things. Major topics include the mechanisms of evolution, biological diversity, population genetics, and ecology.

**General scope of the course:** This course satisfies meets the common course numbering system for New Mexico colleges. It should also transfer to any four year university to satisfy a Biology credit.

### Prerequisites or sequences:

None; Principles I: Cell and Molecular Biology is suggested

### Student Learning Outcomes:

1. Apply 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 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.

**Procedures and Classroom Rules:**

1. Cadets need to bring their NMMI issued laptop and charger to class every day.
2. Cadets are strongly encouraged to take notes during all lectures.
3. This class should be an open discussion of the material between the instructor and the cadets. Please ask questions at an appropriate time during the lecture.
4. Please use appropriate language at all times.
5. Canvas will be used to post grades, assignments, announcements, and handouts. Please use the Canvas page for all resources.
6. Cell phones should not be used in the classroom unless approved by the instructor.
7. We should maintain a professional environment in the classroom. Please be ready to learn and engage when you enter the classroom.
8. NMMI Early Warning System will be used for all disciplinary actions within the classroom. The system can also be used for positive input as well.
9. All exams will be taken in Canvas at the Willson Hall computer lab.

**An explanation of the general format in which the course will be presented**, to include: texts and supplementary materials, learning aids or exhibits, format for daily class presentations, labs or field trips, and assignments and out-of-class activities.

**Mandatory Text:**

The course will cover selected chapters of the textbook, **BIOLOGY 11<sup>th</sup> edition by Mader and Windelspecht** The text will be supplemented by discussions, group exercises, videos, and handouts

**Daily Format of the class will include:**

- **Each lecture will begin with an assessment of the previous lecture. This will often include a daily quiz or assignment to assess the previously covered material.**
- **A brief recap of the previous lecture will be covered, and a new lecture will begin.**
- **A hands-on laboratory component will be conducted each week of class.**
- **Exams will be given approximately every two weeks.**

**Grading Procedures:**

Grades are based on a percentage. 100-90 A, 89-80 B, 79-70 C, 69-60 D, 59 – 0 F

Exams = 40%

Quizzes = 25% Expect Daily or Weekly

Lab Reports and other Assignments = 15% As announced

Final Exam = 20% TBD

**Final Exam Policy:** *this exact statement must be included in the syllabus:*

A mandatory comprehensive final exam or final project will be administered on the scheduled date according to the Final Exam Schedule, unless an exception is approved by the Academic Dean, and will be given to all cadets, regardless of their grade in the course. It will account for no more than 25%, but no less than 15%, of a student's semester grade.

**Final Exam = 20%**

**Late Work** – Work not turned in when collected will be recorded as a 0.

**Absences** – It is your responsibility to attend class and make-up missed quizzes or assessments. If you know that you will miss a class because of a trip or planned absence, **arrange** to make-up the work before the absence or during the absence. There will be no make-up for unexcused absences and work will receive a zero for any assignments missed because of the unexcused absence.

**\*It is your responsibility to arrange with the instructor for make-up work.**

**Exams missed due to absences must be made up within 3 days after returning or the grade will be reduced by 50% automatically.**

**Department/Division Policy on Academic Dishonesty:** *In keeping with Academic Freedom in the classroom, Division policies may differ; however, all Faculty will handle academic dishonesty cases in accordance with the Academic Honor Review procedure established by the Commandant.*

**It is a violation of the Honor Code to discuss questions with a cadet that has taken the quiz or completed work that has been evaluated. It is also a violation to use other students' work from previous semesters.**

**Cheating, assisting another to cheat, 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. A grade of F for the semester may be given and an incident report will be filed with the Honor Board. Use your academic planner for clarification of academic dishonesty situations.**

**Course Outline:** This is a general outline of the course expressed in appropriate time sequences so the student can understand the overall timing and pace of the course. It will include a breakdown of course segments and the time frame within which they are expected to occur, due dates for major assignments, and timing of major tests.

<b>Academic Week</b>	<b>Chapter and Learning Outcomes</b>
Week 1 January 10 <sup>th</sup> – 12 <sup>th</sup> *Classes start on a Wednesday	Ch 18 Origin and History of Life Taxonomy, Systematics, and Phylogeny
Week 2 January 15 <sup>th</sup> – 19 <sup>th</sup> *Monday MLK Day	Ch 28 Invertebrate Evolution and the evolution of animals
Week 3 January 22 <sup>nd</sup> – 26 <sup>th</sup>	Ch 29 Vertebrate Evolution, Chordates, Fish, Amphibians, Reptiles, Mammals
Week 4 January 29 <sup>th</sup> – February 2 <sup>nd</sup>	Ch 15 - 17 Darwin and Evolution, How Populations Evolve, Speciation and Macroevolution
Week 5 February 5 <sup>th</sup> – 9 <sup>th</sup>	Ch 23 Plant Evolution and Diversity
Week 6 February 12 <sup>th</sup> – 16 <sup>th</sup>	Ch 24 -25 Flowering Plants: Structure, Organization, Nutrition and Transport
Week 7 February 19 <sup>th</sup> – 23 <sup>rd</sup> *No class Monday or Friday President's Day and JPA	Ch 24-25 Flowering Plants: Roots, Stems, Leaves
Week 8 February 26 <sup>th</sup> – March 1 <sup>st</sup> Mid-Term WEEK	Ch 21 – 22 Protist Evolution and Diversity Fungi Evolution and Diversity
Week 9 March 4 <sup>th</sup> – 8 <sup>th</sup>	Ch 31 Animal Organization and Homeostasis: Tissues, Organs, Organ Systems, Body cavities



Week 10 March 11 <sup>th</sup> – 15 <sup>th</sup>	Ch 32 Comparative Anatomy: Cardiovascular Systems and Circulation
Week 11 March 18 <sup>th</sup> – 22 <sup>nd</sup> SPRING BREAK WEEK NO CLASS	SPRING BREAK NO CLASS
Week 12 March 25 <sup>th</sup> – March 29 <sup>th</sup> *No class Friday Good Friday	Ch 35 Comparative Anatomy: Respiratory Systems and Nervous Systems
Week 13 April 1 <sup>st</sup> – April 5 <sup>th</sup> *No class Monday Easter Monday	Ch 39 Locomotion and Support Systems: Skeletal and Muscular Systems
Week 14 April 8 <sup>th</sup> – 12 <sup>th</sup>	Ch 44 Population Ecology, Growth Models, Survivorship Curves
Week 15 April 15 <sup>th</sup> – 19 <sup>th</sup>	Ch 45 – 47 Major Ecosystems of the Biosphere, Ecosystem Ecology, Conservation, Biodiversity and Extinction
Week 16 April 22 <sup>nd</sup> – 25 <sup>th</sup> *No class Friday Last week of class	Review for Final Exam
Week 17 April 27 <sup>th</sup> – 30 <sup>th</sup> Final Exams	Final Exam

**Assessment Statement:** *This exact statement must be included in the syllabus:*

In fulfilling NMMI's assessment program, all students will be required to complete a variety of feedback tools to provide information to instructors on the efficacy of courses. NMMI expects students to provide honest and thoughtful answers to these assessment tools.

Click or tap here to enter text.

# NMMI Syllabus

**Semester:** Spring

**Year:** 2024

**Course number:**

BIOL 2610L Principles of Biology: Biodiversity, Ecology, and Evolution Laboratory

**Meeting days, times, and places:**

Section 11 (Tuesday 815-1000)

Section 13 (Tuesday (1005-1150)

Willson Hall 026

**Teacher Name:** MAJ Staci Saiz

**Email:** [staci@nmmi.edu](mailto:staci@nmmi.edu)

**Phone:** 575-624-8152 ext

8175

**Office hours & Location:** Willson 007 Tutoring 0715-0810 and M-F 7<sup>th</sup> period

**Course Description:** This laboratory course is an introduction to the dynamic processes of living things. This course introduces students to the methods used in the study of evolution, ecology, and biological diversity. Designed for students continuing in life sciences.

**General scope of the course:** This laboratory course compliments the concepts covered in the lecture course. Students will learn quantitative skills involved in scientific measurement and data analysis. Students will also perform experiments related to topics covered in class.

**Prerequisites or sequences:**

None

**Course 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.

**Procedures and Classroom Rules:**

1. Cadets need to bring their NMMI issued laptop and charger to lab.
2. Lab Quizzes will be given at the beginning of each lab.
3. Cadets should bring a pencil and pen to lab.

**An explanation of the general format in which the course will be presented:**

All labs are hands-on scientific explorations.

**Mandatory Text: None****Grading Procedures:**

This is a PASS/FAIL laboratory. Any cadet who fails the class automatically fails the lab portion. Lab grades will count for 15% of Principles BIOL 2110 Final Grade.

**Final Exam Policy:** *this exact statement must be included in the syllabus:*

A mandatory comprehensive final exam or final project will be administered on the scheduled date according to the Final Exam Schedule, unless an exception is approved by the Academic Dean, and will be given to all cadets, regardless of their grade in the course. It will account for no more than 25%, but no less than 15%, of a student's semester grade.

**Final Lab Quiz will be given**

**Late Work** – Work not turned in when collected will be recorded as a 0.

**Absences** – It is your responsibility to attend class and make-up missed quizzes or assessments. If you know that you will miss a class because of a trip or planned absence, **arrange** to make-up the work before the absence or during the absence. There will be no make-up for unexcused absences and work will receive a zero for any assignments missed because of the unexcused absence.

**It is your responsibility to arrange with the instructor for make-up work.**

**Exams missed due to extended, unexpected absences must be made up within 3 days after returning or the grade will be docked by 50%.**

**Department/Division Policy on Academic Dishonesty:** *In keeping with Academic Freedom in the classroom, Division policies may differ; however, all Faculty will handle academic dishonesty cases in accordance with the Academic Honor Review procedure established by the Commandant.*

**It is a violation of the Honor Code to discuss questions with a cadet that has taken the quiz or completed work that has been evaluated. It is also a violation to use other students' work from previous semesters.**

**Cheating, assisting another to cheat, 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. A grade of F for the semester may be given and an incident report will be filed with the**

**Honor Board. Use your academic planner for clarification of academic dishonesty situations.**

**Course Outline:** This is a general outline of the course expressed in appropriate time sequences so the student can understand the overall timing and pace of the course. It will include a breakdown of course segments and the time frame within which they are expected to occur, due dates for major assignments, and timing of major tests.

<b>Academic Week</b>	<b>Chapter and Learning Outcomes</b>
Week 1 January 10 <sup>th</sup> – 12 <sup>th</sup> *Classes start on a Wednesday	Ch 18 Origin and History of Life Taxonomy, Systematics, and Phylogeny  <b>No lab this week</b>
Week 2 January 15 <sup>th</sup> – 19 <sup>th</sup> *Monday MLK Day	Ch 28 Invertebrate Evolution and the evolution of animals  <b>Invertebrate Lab: Compare the characteristics of sponges, hydra, jellyfish, flatworms, planarians, roundworms, arthropods, mollusks</b>
Week 3 January 22 <sup>nd</sup> – 26 <sup>th</sup>	Ch 29 Vertebrate Evolution, Chordates, Fish, Amphibians, Reptiles, Mammals  <b>Vertebrate Lab: Fish Dissection, Frog Dissection, Lancelets microscope slides, Observe snake specimen and sea squirts</b>
Week 4 January 29 <sup>th</sup> – February 2 <sup>nd</sup>	Ch 15 - 17 Darwin and Evolution, How Populations Evolve, Speciation and Macroevolution  <b>Lab Investigating: Genetic Drift, Hardy-Weinberg Equilibrium, Allele Frequency</b>
Week 5 February 5 <sup>th</sup> – 9 <sup>th</sup>	Ch 23 Plant Evolution and Diversity

	<p><b>Indoor Greenhouse – Plant tomato seeds and compare white light growth vs. UV Lights</b></p>
<p>Week 6 February 12<sup>th</sup> – 16<sup>th</sup></p>	<p>Ch 24 -25 Flowering Plants: Structure, Organization, Nutrition, Transport, Flowers and Fruits</p> <p><b>Lab:</b> <b>Examine a Lilly: Perfect flower Anatomy and Reproduction</b> <b>Fruit Investigation: Compare Apples, Blueberries, Tomatoes, Peppers, Corn and Beans</b></p>
<p>Week 7 February 19<sup>th</sup> – 23<sup>rd</sup> *No class Monday or Friday President's Day and JPA</p>	<p>Ch 24-25 Flowering Plants: Roots, Stems, Leaves</p> <p><b>Lab:</b> <b>Leaf Structure: Margins and Veins Alternate vs Opposite leaf arrangements, Simple vs Compound Leaves</b> <b>Stem Anatomy and Growth</b> <b>Root structure and function</b></p>
<p>Week 8 February 26<sup>th</sup> – March 1<sup>st</sup> Mid-Term WEEK</p>	<p>Ch 21 – 22 Protist Evolution and Diversity Fungi Evolution and Diversity</p> <p><b>Lab:</b> <b>Investigating Bread Mold, Mushroom structure; spore development with microscopes</b></p>
<p>Week 9 March 4<sup>th</sup> – 8<sup>th</sup></p>	<p>Ch 31 Animal Organization and Homeostasis: Tissues, Organs, Organ Systems, Body cavities</p> <p><b>Lab:</b> <b>Histology of Tissues using a Microscope: Blood, Adipose, Neurons, Muscles, Bone, Epithelial Cells</b></p>

<p>Week 10 March 11<sup>th</sup> – 15<sup>th</sup></p>	<p>Ch 32 Comparative Anatomy: Cardiovascular Systems and Circulation</p> <p><b>Lab:</b> <b>Identifying the five types of White Blood Cells, Blood Pressure, Pulse Rate Resting vs Exercise</b> <b>Compare the heart structure of amphibians vs mammals</b></p>
<p>Week 11 March 18<sup>th</sup> – 22<sup>nd</sup> SPRING BREAK WEEK NO CLASS</p>	<p>SPRING BREAK NO CLASS</p>
<p>Week 12 March 25<sup>th</sup> – March 29<sup>th</sup> *No class Friday Good Friday</p>	<p>Ch 35 Comparative Anatomy: Respiratory Systems and Nervous Systems</p> <p><b>Lab:</b> <b>Sensory and Motor Neuron Brain Games</b></p>
<p>Week 13 April 1<sup>st</sup> – April 5<sup>th</sup> *No class Monday Easter Monday</p>	<p>Ch 39 Locomotion and Support Systems: Skeletal and Muscular Systems</p> <p><b>Lab:</b> <b>Identify and name the bones of humans, birds, horses, reptiles</b> <b>Muscle strength test</b></p>
<p>Week 14 April 8<sup>th</sup> – 12<sup>th</sup></p>	<p>Ch 44 Population Ecology, Growth Models, Survivorship Curves</p> <p><b>Lab:</b> <b>Model Survivorship Curves with Dice and Bubbles</b></p>
<p>Week 15 April 15<sup>th</sup> – 19<sup>th</sup></p>	<p>Ch 45 – 47 Major Ecosystems of the Biosphere, Ecosystem Ecology, Conservation, Biodiversity and Extinction</p> <p><b>Lab:</b> <b>Prepare a powerpoint and speech on one ecosystem of the Biosphere</b></p>

Week 16 April 22 <sup>nd</sup> – 25 <sup>th</sup> *No class Friday Last week of class	Review for Final Exam
Week 17 April 27 <sup>th</sup> – 30 <sup>th</sup> Final Exams	Final Exam

**Assessment Statement:** *This exact statement must be included in the syllabus:*

In fulfilling NMMI's assessment program, all students will be required to complete a variety of feedback tools to provide information to instructors on the efficacy of courses. NMMI expects students to provide honest and thoughtful answers to these assessment tools.

Click or tap here to enter text.



# GENETIC DRIFT LAB

## FOUNDER EFFECT VS. BOTTLENECK EFFECT



### Background:

**Genetic drift** is defined as a **random change** in **allele frequencies** that occurs in small population sizes of living organisms. Genetic drift is not caused by natural selection or survival of the fittest. Devastating natural disasters like predation, drought, hurricanes, and tornadoes can cause genetic drift known as the **bottleneck effect**. In this case, the original population had a high death toll which caused a major shift in the remaining allele combinations of the survivors. **Founder effect** occurs when a few members migrate away from the original population. These organisms have “founded” a new population with a small amount of alleles present. Founder effect does not cause immediate harm or death to a population like bottleneck effect.

### Objective:

This lab will demonstrate how genetic drift can be a strong evolutionary force in nature.

### Materials:

- 1 box or bag of M&M’s per student or group of two
- Calculator
- Colored Pencils
- Paper and Pen

### Initial Population

1. Place all the M&M’s on a paper towel to represent the **initial population** of the organism *Candus spectactularis*. Each color represents a different genetic trait for this population. Each M&M represents 1 allele for that genetic trait. There are 6 possible alleles in the initial population (blue, green, yellow, red, orange, brown).
2. Separate all colors (alleles) into their different groups on the paper towel.
3. Count the number of alleles for each color and report the data in the table:

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency							

4. Use the following equation to calculate Allele Frequency by percentage:

$$\text{Allele Frequency (\%)} = \frac{\text{total number of each allele}}{\text{total number of alleles}} \times 100$$

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency (%)							





# GENETIC DRIFT LAB

## FOUNDER EFFECT VS. BOTTLENECK EFFECT



### Population reduction by Founder Effect

- Mix all the M&M's so the alleles are randomly assorted in the population.
- Without looking, try to **remove or choose 6 alleles at random from the population**. These alleles represent a **new founding group** that has chosen to migrate away from the original breeding population. Note that these organisms are still alive and healthy, but they have moved to a new location.
- Count the total color for each allele in the founding population:

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency							

- Use the following equation to calculate Allele Frequency of the Founding Population by percentage:

$$\text{Allele Frequency (\%)} = \frac{\text{total number of each allele}}{\text{total number of alleles}} \times 100$$

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency (%)							

### Population reduction by Bottleneck Effect

- Place the 6 Founder Effect alleles back into the initial population and mix the alleles.
- Without looking, try to **remove 6 new alleles from the population**. This removal represents a **forest fire** that suddenly wiped out almost all members of the population. Only **3 individual remain**, each having 2 alleles for each trait. All other alleles have disappeared from the breeding initial breeding population. **This represents genetic drift by Bottleneck Effect**.
- Count the number of alleles for the remaining population:

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency							

- Use the following equation to calculate Allele Frequency of the Founding Population by percentage:

$$\text{Allele Frequency (\%)} = \frac{\text{total number of each allele}}{\text{total number of alleles}} \times 100$$

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency (%)							



# GENETIC DRIFT LAB

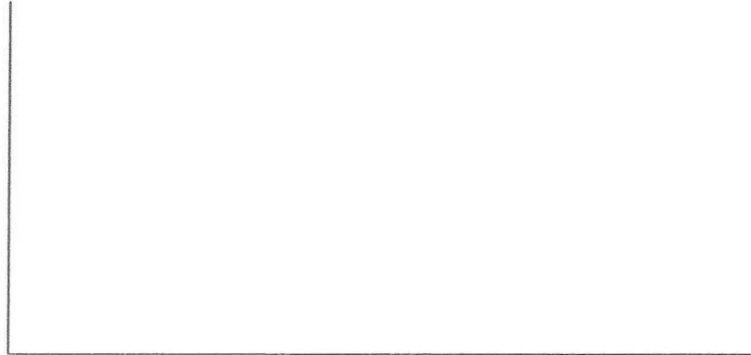
## FOUNDER EFFECT VS. BOTTLENECK EFFECT



### Data Analysis & Graphs

1. Create a bar chart of the allele frequencies by percentage for the initial population, founder effect population and bottleneck effect population.
2. Make sure to include proper units, axis labels and used color pencils to represent each allele.

Initial Population – Allele Frequency Percentage (%)



Founder Effect – Allele Frequency Percentage (%)



Bottleneck Effect – Allele Frequency Percentage (%)







## New Mexico General Education Curriculum Course Certification Form

Application Number

2374

### Institution and Course Information

Name of Institution	NMMI
Chief Academic Officer Name	Orlando Griego
Chief Academic Officer Email	OGriego@nmmi.edu
Registrar Name	Nekeya Bertrand
Registrar Email	bertrand@nmmi.edu
Department	Math and Science Division
Prefix	BIOL
Number	2610L
Suffix	
Title	Principles of Biology: Biodiversity, Ecology, and Evolution lab
Number of Credits	0

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	BIOL
Number	2610
Suffix	
Title	Principles of Biology: Biodiversity, Ecology, and Evolution

### New Mexico Common Course information

Prefix	BIOL
Number	2610L
Suffix	
Title	Principles of Biology: Biodiversity, Ecology, and Evolution lab

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

Communications     
  Mathematics     
  Science     
  Social & Behavioral Sciences  
 Humanities     
  Creative & Fine Arts     
  Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

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

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

Same as CCNs

**C. Narrative**

In the boxes provided, write a short (~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 skill. 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.*

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

Students in this laboratory course will use the scientific method as a problem solving tool. Experiments and hands-on projects will be conducted weekly to assess all aspects of critical thinking.

1. Problem setting: Students will use the scientific method to identify problems and gather background information on various scientific topics. The problem solving pathway should include research questions like who, what, where, when, why and how is the problem occurring. After the problem has been identified, students will develop a hypothesis to test in a laboratory experiment.
2. Evidence Acquisition and Evidence Evaluation: Each week the students will be given a lab sheet to fill out for a grade. Students will gather materials and follow the scientific method to acquire data to analyze. Throughout this course, the evidence will be acquired from viewing samples of organisms, weighing objects using a scale, viewing change in samples over time, calculating probability, measuring distance changes, allele frequencies & genetic drift, and more. After completing this portion of the laboratory, students will be asked to evaluate the data. The lab group

will form a discussion and cadets will be asked to write their evaluations in a laboratory report. Students should evaluate their hypothesis, and compare it to the evidence acquired in the lab.

3. Reasoning/Conclusion: Students will be asked to discuss and type a conclusion for each laboratory experiment. The conclusion is a chance to evaluate the entire laboratory process. This is also a good time for the students to recognize mistakes and future problems that could be researched. Students should use sound reasoning and judgement for why the results occurred in the laboratory.

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

This laboratory course will provide students plenty of chances to process quantitative data acquired from experimentation.

1. Communication/Representation of Quantitative Information: Students in this course will build at least one scientific poster and/or written report that includes quantitative data. The student may be asked to present this poster to the class, or take it to a scientific conference for discussion. Ideas will be expressed both symbolically and graphically. Students should be able to communicate the entire scientific process and discuss the data gathered from laboratory experimentation. This communication can be written in a laboratory report or given as an oral speech.

2. Analysis of Quantitative Arguments: Students should be able to back up their laboratory analysis with a constructive argument and statistical inference. Corrections will be made, and/or experiments repeated if an error occurred. Data will be calculated, critiqued, and reported. Students should be able to defend their data and conclusions reached near the end of a project.

3. Application of Quantitative Models: Students will be asked to create scientific graphs of quantitative data. Trends may easily be seen and studied with this approach. Students will use Microsoft Excel to build the model/graph. Each axis must be properly labeled and a college level title included.

**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 biological sciences course, students will need to use intercultural reasoning and ethical reasoning for understanding past/present/future scientific advancements.

Sustainability:

☑ The natural and human worlds will be studied in this course. Students will be given the freedom to express their cultural beliefs and values on topics such as evolution and natural selection.

☑ If animal specimens are dissected, they will be acquired and treated with ethical scientific standards. When possible, models will be studied to promote sustainability of living organisms.

☑ Environmental impacts, socio-cultural interactions, political and economic factors may be discussed as they relate to this Biology course.

Collaboration

☑ Teamwork will be a necessary factor for all laboratory sections. Students will work in groups of two or three to complete the labs. Group work will promote collaboration skills and communication. When possible, field trips will be taken to promote civic engagement within our local area and state of New Mexico. When possible, guest lectures may be brought in to inspire future career options and knowledge from local businesses or organizations as they relate to Biology.

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

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

Link to Institution's General Education Assessment Plan

<https://www.nmmi.edu/wp-content/uploads/2022/11/ACADEMIC-ASSESSMENT-PLAN.pdf>

## NMMI Syllabus

Semester: Spring

Year: 2024

### Course number:

BIOL 2610 Principles of Biology: Biodiversity, Ecology, and Evolution

### Meeting days, times, and places:

Section 02 (MWF 910-1000)

Section 06 (MWF 1345-1435)

Willson Hall 017

**Teacher Name:** MAJ Staci Saiz

**Email:** [staci@nmmi.edu](mailto:staci@nmmi.edu)

**Phone:** 575-624-8152 ext

8175

**Office hours & Location:** Willson 007 Tutoring 0715-0810 and M-F 7<sup>th</sup> period

**Course Description:** This course is an introduction to the dynamic processes of living things. Major topics include the mechanisms of evolution, biological diversity, population genetics, and ecology.

**General scope of the course:** This course satisfies meets the common course numbering system for New Mexico colleges. It should also transfer to any four year university to satisfy a Biology credit.

### Prerequisites or sequences:

None; Principles I: Cell and Molecular Biology is suggested

### Student Learning Outcomes:

1. Apply 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 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.

**Procedures and Classroom Rules:**

1. Cadets need to bring their NMMI issued laptop and charger to class every day.
2. Cadets are strongly encouraged to take notes during all lectures.
3. This class should be an open discussion of the material between the instructor and the cadets. Please ask questions at an appropriate time during the lecture.
4. Please use appropriate language at all times.
5. Canvas will be used to post grades, assignments, announcements, and handouts. Please use the Canvas page for all resources.
6. Cell phones should not be used in the classroom unless approved by the instructor.
7. We should maintain a professional environment in the classroom. Please be ready to learn and engage when you enter the classroom.
8. NMMI Early Warning System will be used for all disciplinary actions within the classroom. The system can also be used for positive input as well.
9. All exams will be taken in Canvas at the Willson Hall computer lab.

**An explanation of the general format in which the course will be presented**, to include: texts and supplementary materials, learning aids or exhibits, format for daily class presentations, labs or field trips, and assignments and out-of-class activities.

**Mandatory Text:**

The course will cover selected chapters of the textbook, **BIOLOGY 11<sup>th</sup> edition by Mader and Windelspecht** The text will be supplemented by discussions, group exercises, videos, and handouts

**Daily Format of the class will include:**

- **Each lecture will begin with an assessment of the previous lecture. This will often include a daily quiz or assignment to assess the previously covered material.**
- **A brief recap of the previous lecture will be covered, and a new lecture will begin.**
- **A hands-on laboratory component will be conducted each week of class.**
- **Exams will be given approximately every two weeks.**

**Grading Procedures:**

Grades are based on a percentage. 100-90 A, 89-80 B, 79-70 C, 69-60 D, 59 – 0 F

Exams = 40%

Quizzes = 25% Expect Daily or Weekly

Lab Reports and other Assignments = 15% As announced

Final Exam = 20% TBD

**Final Exam Policy:** *this exact statement must be included in the syllabus:*

A mandatory comprehensive final exam or final project will be administered on the scheduled date according to the Final Exam Schedule, unless an exception is approved by the Academic Dean, and will be given to all cadets, regardless of their grade in the course. It will account for no more than 25%, but no less than 15%, of a student's semester grade.

**Final Exam = 20%**

**Late Work** – Work not turned in when collected will be recorded as a 0.

**Absences** – It is your responsibility to attend class and make-up missed quizzes or assessments. If you know that you will miss a class because of a trip or planned absence, **arrange** to make-up the work before the absence or during the absence. There will be no make-up for unexcused absences and work will receive a zero for any assignments missed because of the unexcused absence.

**\*It is your responsibility to arrange with the instructor for make-up work.**

**Exams missed due to absences must be made up within 3 days after returning or the grade will be reduced by 50% automatically.**

**Department/Division Policy on Academic Dishonesty:** *In keeping with Academic Freedom in the classroom, Division policies may differ; however, all Faculty will handle academic dishonesty cases in accordance with the Academic Honor Review procedure established by the Commandant.*

**It is a violation of the Honor Code to discuss questions with a cadet that has taken the quiz or completed work that has been evaluated. It is also a violation to use other students' work from previous semesters.**

**Cheating, assisting another to cheat, 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. A grade of F for the semester may be given and an incident report will be filed with the Honor Board. Use your academic planner for clarification of academic dishonesty situations.**

**Course Outline:** This is a general outline of the course expressed in appropriate time sequences so the student can understand the overall timing and pace of the course. It will include a breakdown of course segments and the time frame within which they are expected to occur, due dates for major assignments, and timing of major tests.

<b>Academic Week</b>	<b>Chapter and Learning Outcomes</b>
Week 1 January 10 <sup>th</sup> – 12 <sup>th</sup> *Classes start on a Wednesday	Ch 18 Origin and History of Life Taxonomy, Systematics, and Phylogeny
Week 2 January 15 <sup>th</sup> – 19 <sup>th</sup> *Monday MLK Day	Ch 28 Invertebrate Evolution and the evolution of animals
Week 3 January 22 <sup>nd</sup> – 26 <sup>th</sup>	Ch 29 Vertebrate Evolution, Chordates, Fish, Amphibians, Reptiles, Mammals
Week 4 January 29 <sup>th</sup> – February 2 <sup>nd</sup>	Ch 15 - 17 Darwin and Evolution, How Populations Evolve, Speciation and Macroevolution
Week 5 February 5 <sup>th</sup> – 9 <sup>th</sup>	Ch 23 Plant Evolution and Diversity
Week 6 February 12 <sup>th</sup> – 16 <sup>th</sup>	Ch 24 -25 Flowering Plants: Structure, Organization, Nutrition and Transport
Week 7 February 19 <sup>th</sup> – 23 <sup>rd</sup> *No class Monday or Friday President's Day and JPA	Ch 24-25 Flowering Plants: Roots, Stems, Leaves
Week 8 February 26 <sup>th</sup> – March 1 <sup>st</sup> Mid-Term WEEK	Ch 21 – 22 Protist Evolution and Diversity Fungi Evolution and Diversity
Week 9 March 4 <sup>th</sup> – 8 <sup>th</sup>	Ch 31 Animal Organization and Homeostasis: Tissues, Organs, Organ Systems, Body cavities

Week 10 March 11 <sup>th</sup> – 15 <sup>th</sup>	Ch 32 Comparative Anatomy: Cardiovascular Systems and Circulation
Week 11 March 18 <sup>th</sup> – 22 <sup>nd</sup> SPRING BREAK WEEK NO CLASS	SPRING BREAK NO CLASS
Week 12 March 25 <sup>th</sup> – March 29 <sup>th</sup> *No class Friday Good Friday	Ch 35 Comparative Anatomy: Respiratory Systems and Nervous Systems
Week 13 April 1 <sup>st</sup> – April 5 <sup>th</sup> *No class Monday Easter Monday	Ch 39 Locomotion and Support Systems: Skeletal and Muscular Systems
Week 14 April 8 <sup>th</sup> – 12 <sup>th</sup>	Ch 44 Population Ecology, Growth Models, Survivorship Curves
Week 15 April 15 <sup>th</sup> – 19 <sup>th</sup>	Ch 45 – 47 Major Ecosystems of the Biosphere, Ecosystem Ecology, Conservation, Biodiversity and Extinction
Week 16 April 22 <sup>nd</sup> – 25 <sup>th</sup> *No class Friday Last week of class	Review for Final Exam
Week 17 April 27 <sup>th</sup> – 30 <sup>th</sup> Final Exams	Final Exam

**Assessment Statement:** *This exact statement must be included in the syllabus:*

In fulfilling NMMI's assessment program, all students will be required to complete a variety of feedback tools to provide information to instructors on the efficacy of courses. NMMI expects students to provide honest and thoughtful answers to these assessment tools.

Click or tap here to enter text.

# NMMI Syllabus

**Semester:** Spring

**Year:** 2024

**Course number:**

BIOL 2610L Principles of Biology: Biodiversity, Ecology, and Evolution Laboratory

**Meeting days, times, and places:**

Section 11 (Tuesday 815-1000)

Section 13 (Tuesday (1005-1150)

Willson Hall 026

**Teacher Name:** MAJ Staci Saiz

**Email:** [staci@nmmi.edu](mailto:staci@nmmi.edu)

**Phone:** 575-624-8152 ext

8175

**Office hours & Location:** Willson 007 Tutoring 0715-0810 and M-F 7<sup>th</sup> period

**Course Description:** This laboratory course is an introduction to the dynamic processes of living things. This course introduces students to the methods used in the study of evolution, ecology, and biological diversity. Designed for students continuing in life sciences.

**General scope of the course:** This laboratory course compliments the concepts covered in the lecture course. Students will learn quantitative skills involved in scientific measurement and data analysis. Students will also perform experiments related to topics covered in class.

**Prerequisites or sequences:**

None

**Course 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.

**Procedures and Classroom Rules:**

1. Cadets need to bring their NMMI issued laptop and charger to lab.
2. Lab Quizzes will be given at the beginning of each lab.
3. Cadets should bring a pencil and pen to lab.

**An explanation of the general format in which the course will be presented:**

All labs are hands-on scientific explorations.

**Mandatory Text: None****Grading Procedures:**

This is a PASS/FAIL laboratory. Any cadet who fails the class automatically fails the lab portion. Lab grades will count for 15% of Principles BIOL 2110 Final Grade.

**Final Exam Policy:** *this exact statement must be included in the syllabus:*

A mandatory comprehensive final exam or final project will be administered on the scheduled date according to the Final Exam Schedule, unless an exception is approved by the Academic Dean, and will be given to all cadets, regardless of their grade in the course. It will account for no more than 25%, but no less than 15%, of a student's semester grade.

**Final Lab Quiz will be given**

**Late Work** – Work not turned in when collected will be recorded as a 0.

**Absences** – It is your responsibility to attend class and make-up missed quizzes or assessments. If you know that you will miss a class because of a trip or planned absence, **arrange** to make-up the work before the absence or during the absence. There will be no make-up for unexcused absences and work will receive a zero for any assignments missed because of the unexcused absence.

**It is your responsibility to arrange with the instructor for make-up work.**

**Exams missed due to extended, unexpected absences must be made up within 3 days after returning or the grade will be docked by 50%.**

**Department/Division Policy on Academic Dishonesty:** *In keeping with Academic Freedom in the classroom, Division policies may differ; however, all Faculty will handle academic dishonesty cases in accordance with the Academic Honor Review procedure established by the Commandant.*

**It is a violation of the Honor Code to discuss questions with a cadet that has taken the quiz or completed work that has been evaluated. It is also a violation to use other students' work from previous semesters.**

**Cheating, assisting another to cheat, 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. A grade of F for the semester may be given and an incident report will be filed with the**

**Honor Board. Use your academic planner for clarification of academic dishonesty situations.**

**Course Outline:** This is a general outline of the course expressed in appropriate time sequences so the student can understand the overall timing and pace of the course. It will include a breakdown of course segments and the time frame within which they are expected to occur, due dates for major assignments, and timing of major tests.

<b>Academic Week</b>	<b>Chapter and Learning Outcomes</b>
Week 1 January 10 <sup>th</sup> – 12 <sup>th</sup> *Classes start on a Wednesday	Ch 18 Origin and History of Life Taxonomy, Systematics, and Phylogeny  <b>No lab this week</b>
Week 2 January 15 <sup>th</sup> – 19 <sup>th</sup> *Monday MLK Day	Ch 28 Invertebrate Evolution and the evolution of animals  <b>Invertebrate Lab: Compare the characteristics of sponges, hydra, jellyfish, flatworms, planarians, roundworms, arthropods, mollusks</b>
Week 3 January 22 <sup>nd</sup> – 26 <sup>th</sup>	Ch 29 Vertebrate Evolution, Chordates, Fish, Amphibians, Reptiles, Mammals  <b>Vertebrate Lab: Fish Dissection, Frog Dissection, Lancelets microscope slides, Observe snake specimen and sea squirts</b>
Week 4 January 29 <sup>th</sup> – February 2 <sup>nd</sup>	Ch 15 - 17 Darwin and Evolution, How Populations Evolve, Speciation and Macroevolution  <b>Lab Investigating: Genetic Drift, Hardy-Weinberg Equilibrium, Allele Frequency</b>
Week 5 February 5 <sup>th</sup> – 9 <sup>th</sup>	Ch 23 Plant Evolution and Diversity

	<p><b>Indoor Greenhouse – Plant tomato seeds and compare white light growth vs. UV Lights</b></p>
<p>Week 6 February 12<sup>th</sup> – 16<sup>th</sup></p>	<p>Ch 24 -25 Flowering Plants: Structure, Organization, Nutrition, Transport, Flowers and Fruits</p> <p><b>Lab:</b> <b>Examine a Lilly: Perfect flower Anatomy and Reproduction</b> <b>Fruit Investigation: Compare Apples, Blueberries, Tomatoes, Peppers, Corn and Beans</b></p>
<p>Week 7 February 19<sup>th</sup> – 23<sup>rd</sup> *No class Monday or Friday President's Day and JPA</p>	<p>Ch 24-25 Flowering Plants: Roots, Stems, Leaves</p> <p><b>Lab:</b> <b>Leaf Structure: Margins and Veins Alternate vs Opposite leaf arrangements, Simple vs Compound Leaves</b> <b>Stem Anatomy and Growth</b> <b>Root structure and function</b></p>
<p>Week 8 February 26<sup>th</sup> – March 1<sup>st</sup> Mid-Term WEEK</p>	<p>Ch 21 – 22 Protist Evolution and Diversity Fungi Evolution and Diversity</p> <p><b>Lab:</b> <b>Investigating Bread Mold, Mushroom structure; spore development with microscopes</b></p>
<p>Week 9 March 4<sup>th</sup> – 8<sup>th</sup></p>	<p>Ch 31 Animal Organization and Homeostasis: Tissues, Organs, Organ Systems, Body cavities</p> <p><b>Lab:</b> <b>Histology of Tissues using a Microscope: Blood, Adipose, Neurons, Muscles, Bone, Epithelial Cells</b></p>



<p>Week 10 March 11<sup>th</sup> – 15<sup>th</sup></p>	<p>Ch 32 Comparative Anatomy: Cardiovascular Systems and Circulation</p> <p><b>Lab:</b> <b>Identifying the five types of White Blood Cells, Blood Pressure, Pulse Rate Resting vs Exercise</b> <b>Compare the heart structure of amphibians vs mammals</b></p>
<p>Week 11 March 18<sup>th</sup> – 22<sup>nd</sup> SPRING BREAK WEEK NO CLASS</p>	<p>SPRING BREAK NO CLASS</p>
<p>Week 12 March 25<sup>th</sup> – March 29<sup>th</sup> *No class Friday Good Friday</p>	<p>Ch 35 Comparative Anatomy: Respiratory Systems and Nervous Systems</p> <p><b>Lab:</b> <b>Sensory and Motor Neuron Brain Games</b></p>
<p>Week 13 April 1<sup>st</sup> – April 5<sup>th</sup> *No class Monday Easter Monday</p>	<p>Ch 39 Locomotion and Support Systems: Skeletal and Muscular Systems</p> <p><b>Lab:</b> <b>Identify and name the bones of humans, birds, horses, reptiles</b> <b>Muscle strength test</b></p>
<p>Week 14 April 8<sup>th</sup> – 12<sup>th</sup></p>	<p>Ch 44 Population Ecology, Growth Models, Survivorship Curves</p> <p><b>Lab:</b> <b>Model Survivorship Curves with Dice and Bubbles</b></p>
<p>Week 15 April 15<sup>th</sup> – 19<sup>th</sup></p>	<p>Ch 45 – 47 Major Ecosystems of the Biosphere, Ecosystem Ecology, Conservation, Biodiversity and Extinction</p> <p><b>Lab:</b> <b>Prepare a powerpoint and speech on one ecosystem of the Biosphere</b></p>

Week 16 April 22 <sup>nd</sup> – 25 <sup>th</sup> *No class Friday Last week of class	Review for Final Exam
Week 17 April 27 <sup>th</sup> – 30 <sup>th</sup> Final Exams	Final Exam

**Assessment Statement:** *This exact statement must be included in the syllabus:*

In fulfilling NMMI's assessment program, all students will be required to complete a variety of feedback tools to provide information to instructors on the efficacy of courses. NMMI expects students to provide honest and thoughtful answers to these assessment tools.

Click or tap here to enter text.



# GENETIC DRIFT LAB

## FOUNDER EFFECT VS. BOTTLENECK EFFECT



### Background:

**Genetic drift** is defined as a **random change** in **allele frequencies** that occurs in small population sizes of living organisms. Genetic drift is not caused by natural selection or survival of the fittest. Devastating natural disasters like predation, drought, hurricanes, and tornadoes can cause genetic drift known as the **bottleneck effect**. In this case, the original population had a high death toll which caused a major shift in the remaining allele combinations of the survivors. **Founder effect** occurs when a few members migrate away from the original population. These organisms have “founded” a new population with a small amount of alleles present. Founder effect does not cause immediate harm or death to a population like bottleneck effect.

### Objective:

This lab will demonstrate how genetic drift can be a strong evolutionary force in nature.

### Materials:

- 1 box or bag of M&M’s per student or group of two
- Calculator
- Colored Pencils
- Paper and Pen

### Initial Population

1. Place all the M&M’s on a paper towel to represent the **initial population** of the organism *Candus spectactularis*. Each color represents a different genetic trait for this population. Each M&M represents 1 allele for that genetic trait. There are 6 possible alleles in the initial population (blue, green, yellow, red, orange, brown).
2. Separate all colors (alleles) into their different groups on the paper towel.
3. Count the number of alleles for each color and report the data in the table:

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency							

4. Use the following equation to calculate Allele Frequency by percentage:

$$\text{Allele Frequency (\%)} = \frac{\text{total number of each allele}}{\text{total number of alleles}} \times 100$$

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency (%)							



# GENETIC DRIFT LAB

## FOUNDER EFFECT VS. BOTTLENECK EFFECT



### Population reduction by Founder Effect

- Mix all the M&M's so the alleles are randomly assorted in the population.
- Without looking, try to **remove or choose 6 alleles at random from the population**. These alleles represent a **new founding group** that has chosen to migrate away from the original breeding population. Note that these organisms are still alive and healthy, but they have moved to a new location.
- Count the total color for each allele in the founding population:

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency							

- Use the following equation to calculate Allele Frequency of the Founding Population by percentage:

$$\text{Allele Frequency (\%)} = \frac{\text{total number of each allele}}{\text{total number of alleles}} \times 100$$

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency (%)							

### Population reduction by Bottleneck Effect

- Place the 6 Founder Effect alleles back into the initial population and mix the alleles.
- Without looking, try to **remove 6 new alleles from the population**. This removal represents a **forest fire** that suddenly wiped out almost all members of the population. Only **3 individual remain**, each having 2 alleles for each trait. All other alleles have disappeared from the breeding initial breeding population. **This represents genetic drift by Bottleneck Effect**.
- Count the number of alleles for the remaining population:

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency							

- Use the following equation to calculate Allele Frequency of the Founding Population by percentage:

$$\text{Allele Frequency (\%)} = \frac{\text{total number of each allele}}{\text{total number of alleles}} \times 100$$

Color	Blue	Green	Yellow	Red	Orange	Brown	Total Alleles
Allele Frequency (%)							



# GENETIC DRIFT LAB

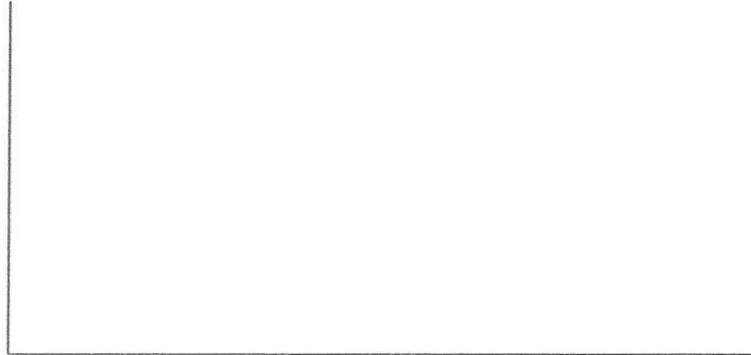
## FOUNDER EFFECT VS. BOTTLENECK EFFECT



### Data Analysis & Graphs

1. Create a bar chart of the allele frequencies by percentage for the initial population, founder effect population and bottleneck effect population.
2. Make sure to include proper units, axis labels and used color pencils to represent each allele.

Initial Population – Allele Frequency Percentage (%)



Founder Effect – Allele Frequency Percentage (%)



Bottleneck Effect – Allele Frequency Percentage (%)







## New Mexico General Education Curriculum Course Certification Form

Application Number

2377

### Institution and Course Information

Name of Institution	NMSU
Chief Academic Officer Name	Lakshmi Reddi
Chief Academic Officer Email	provost@nmsu.edu
Registrar Name	Gabrielle Martinez
Registrar Email	gdmart@nmsu.edu
Department	Geography and Environmental Studies
Prefix	GEOG
Number	1150G
Suffix	
Title	Introduction to Environmental Studies
Number of Credits	3

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	n/a
Number	n/a
Suffix	n/a
Title	n/a

### New Mexico Common Course information

Prefix	GEOG
Number	1150G
Suffix	
Title	Introduction to Environmental Studies

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

Communications     
  Mathematics     
  Science     
  Social & Behavioral Sciences  
 Humanities     
  Creative & Fine Arts     
  Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

- 1 Survey the major environmental issues facing humankind.
- 2 Assess the conflicts or perceived conflicts between society and the environment.
- 3 Evaluate the relationships between the environment and the economy.
- 4 Analyze potential solutions.
- 5 Develop clear and effective communicators skills.

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 (~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 skill. 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.*

GEOG 1150G engages students in a variety of genres and media that include oral and written communication. For example, in the attached sample assignment, students are asked to research an environmental issue either by investigating certain locations in person (e.g., a supermarket or a park) or by exploring diverse sources from home (e.g., websites and brochures). The research involves diverse written media such as park interpretative materials, product labels, or advertisements as well as oral communications. The genres are similarly diverse and encompass poetry, music, non-fictional materials, and others. After researching the environmental issue of interest, students are required to develop thoughtful arguments to support their findings and to carefully evaluate their findings in the context of larger environmental issues (e.g., local food movement or debates over the national parks). A peer review embedded in the assignment moreover promotes critical reflection on other students' messages and engagement with these students through discussions.

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

Students in GEOG 1150G are required to engage in critical thinking throughout the semester, as suggested by the diverse topics and assignments noted in the attached syllabus. For example, over the course of the semester, students



in the class acquire, analyze, and interpret evidence (e.g., fictional and non-fictional writings, maps, and surveys and interviews) of people (e.g., education, income, and religion) and the environment (e.g., climate, soils, and vegetation) and their interactions (e.g., through land use) to evaluate important environmental issues (i.e., problem settings), assess the complex socio-ecological system dynamics producing these issues, and develop potential solutions. This is accomplished through numerous in-class activities like discussions and hands-on assignments as well as through local field trips and other homework assignments.

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

The overarching goals of GEOG 1150G is to teach students about how the complex and dynamic interactions of the environment and people ("natural and human worlds" in ii) result in a diverse range of environmental issues that threaten sustainability and also to discuss with students potential strategies to address these issues and promote a sustainable future. This is accomplished by considering these topics from numerous perspectives. For example, the course invites students to examine key thinkers and issues that have shaped our understanding of the environment and also introduces students to some of the most important policies and organizations that have shaped management of the environment. Moreover, the overarching goals are achieved through a combination of lectures, class discussions, group exercises, writing assignments, and presentations of exercises completed outside of class. The class also incorporates guest speakers from the NMSU campus and beyond in order to provide a window into the range of expertise and perspectives on environmental studies. In addition to "ii. Sustainability and the natural and human worlds", GEOG 1150G also strongly promotes "iv. Collaboration skills, teamwork and value systems." That is, throughout the semester, students work on in-class team activities that teach students how to collaborate to find answers to different problems. For example, in one assignment, students work together to calculate their individual and their group's environmental footprint. After calculating their footprint, teams are challenged to discuss opportunities for reducing their footprint, the barriers that stand in the way of doing so, and potential solutions. GEOG 1150G also address "v. Civic discourse, civic knowledge and engagement – local and global". For example, in another assignment, students need to identify and engage with a local environmental organization to determine what the organization's mission is and how it carries out that mission. Importantly, this also requires students to determine how the organization contributes to civic discourse and how it promotes active community engagement. Students are moreover challenged to develop additional ideas to advance civic knowledge and engagement through this organization. In sum, throughout the semester, the class provides opportunities to enhance their personal and social responsibility skills.

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

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

Link to Institution's General Education Assessment Plan

<https://gened.nmsu.edu/recertification-and-assessment/Institutional-GE-Assessment-Plan.pdf>

## **GEOG 1150G Essay 2 Assignment**

### Important Dates

**Thursday, March 24<sup>th</sup>:** Decide on a preliminary topic and be ready to discuss this in class

**Thursday, March 31<sup>st</sup>:** Essay First Draft due to Canvas by 8 pm

**Monday, April 4<sup>th</sup>:** Peer Reviews due to Canvas by 2 pm

**Tuesday, April 12<sup>th</sup>:** Final Draft of Essay Due 10:30 am in Canvas

*Instructions for uploading your first draft and completing your peer reviews on Canvas will be posted by Monday March 28.*

You have four options for your second research essay. Options one through three include site-based research that you will conduct and connect to other research that you find on the topic. Option 4 is an open option for you to write a research paper on an environmental issue of your choice. We will not meet in class on Tuesday March 29 or Thursday March 31; use that time to do your research and work on your essay.

### **Option 1. Green Marketing**

Visit both a conventional supermarket (e.g., Safeway, Albertsons, etc.) and an alternative market that emphasizes green products (Whole Foods Market, Natural Grocers, etc.) How does the “conventional” differ from the “alternative” on such dimensions as mission, product selection, ambiance, layout, information availability, pricing, ownership structure and other salient dimensions? Provide examples to illustrate your point. What claims are made for the alternative products? Do you believe the claims? Why or why not? In your mind, how viable is this as an alternative as a means of making our food supply sustainable?

### **Option 2. Renewable energy**

Given that solar power has been adopted in a very uneven and patchy manner in Las Cruces, what explains why some people opt for the installation of solar power? Visit and interview at least two individuals or businesses that have installed solar panels and try to explain who is using solar power and why. Describe the landscape and the solar panel system, including size, energy generation, aesthetic appearance, and ownership. What were their motivations for going solar (environmental ethics, economic bottom-line, both, something else)? What trade-offs did they consider (costs, subsidies, or incentives)? How do your findings compare to popular media explanations of individuals and business decisions to go solar?

### **Option 3. Protected areas**

Visit one of the White Sands National Park visitor centers, campground and trailhead. Speak with staff working there and at least one group of visitors, and describe the interpretative materials, and some of the visitation infrastructure. How does this area contribute to ecological conservation? What are threats to this mission? How is it viewed by the broader community? How is “nature” represented and communicated in park materials and design? What are some of the conflicts and trade-offs that it has faced historically?

If you choose one of the options 1 through 3, you are expected to observe one of the settings, carry out follow-up research and write up your analysis. This should be a hands-on experience and you can reflect on your own experience as well as gather secondary information from other sources. Briefly connect your site(s) in context to larger environmental issues (e.g., local food movement, renewable energy in relation to climate change, debates over the national parks, etc.) in the introduction and the conclusion.

The observations and analysis are the body of the paper, but should also be established in the introduction.

#### **Option 4. Environmental Issue of Your Own Choice**

Choose an environmental controversy, issue, or event and write an essay that focuses on the broader implications of the event or issue for environmental ideas and policy. For this assignment you are allowed to choose a topic that interests you. The topic could be local, national, or international. You may write about a topic we discuss in class (or a topic we will discuss in the future), or something altogether different. Although there is room for flexibility, be very specific about your topic. Essays attempting to examine broad and complex topics such as “climate change in Mexico” will likely fall short in providing sufficient detail in the space available. Instead, bring your topic into geographic and thematic focus. Examples of environmental issues that you could choose to write about include: the urban heat island effect in Las Cruces and/or the Southwest; agricultural use of water in New Mexico; the Flint, Michigan Water Crisis; or the 2022 Calf Canyon/Hermits Peak Fire . *Please consult me if you need some ideas or have doubts over the feasibility of your topic.* Your essay should include: Brief summary of the topic, issue, event, or controversy; a discussion of the causes (physical and/or social, who was blamed or involved) and any disagreements surrounding the causes; a discussion of the consequences including who was most affected and who, if anyone, benefited; a discussion of the solutions, any arguments about them, and the implications for subsequent policies and decisions; and a concluding section that discusses the relevance of the event or issue for today's environmental policies, attitudes or debates and whether it has been solved, could happen again, or is likely to get worse.

#### **Guidelines for the Essay**

- Your essay should be thoughtful, convincing and interesting, insightful, include detail and originality, be well written, and be on time. Feel free to include maps, photos or graphs (not included in word count) if they are relevant.
- Length: 1,200 to 1,500 words (excluding references, graphs, maps, charts, etc.)
- Format: Please double-space your essay in a Times or similar 12-point font.
- Points: This essay is worth 200 points total. Your peer reviews will count as 50 points, and your final essay will count as 150 points.
- You can see a more detailed rubric posted on Canvas.



## New Mexico General Education Curriculum Course Certification Form

Application Number

2378

### Institution and Course Information

Name of Institution	Luna Community College
Chief Academic Officer Name	Karen Torres
Chief Academic Officer Email	ktorres@luna.edu
Registrar Name	Alicia Chacon
Registrar Email	achacon@luna.edu
Department	Business
Prefix	ECON
Number	2120
Suffix	
Title	Microeconomic Principles
Number of Credits	3

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	n/a
Number	n/a
Suffix	n/a
Title	n/a

### New Mexico Common Course information

Prefix	ECON
Number	2120
Suffix	
Title	Microeconomic Principles

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

Communications     
  Mathematics     
  Science     
  Social & Behavioral Sciences  
 Humanities     
  Creative & Fine Arts     
  Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

1. Explain the concept of opportunity cost.
2. Demonstrate knowledge of the laws of supply and demand and equilibrium.
3. Use supply and demand curves to analyze responses of markets to external events.
4. Use supply and demand analysis to examine the impact of government intervention.
5. Explain and calculate price elasticity of demand and other elasticities.
6. Demonstrate an understanding of producer choice, including cost and break-even analysis.
7. Compare and contrast the following market structures: perfect competition, monopoly, monopolistic competition, and oligopoly.

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 (~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 skill. 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 course, we focus on developing communication skills through in-class discussions. These discussions challenge students to apply microeconomic concepts to different scenarios. Some questions will require statistical analysis of economic data, while others will involve evaluating ethical and societal issues, encouraging students to build and present arguments. Each student will participate in at least six discussions, where they will assess microeconomic issues, formulate responses, and engage in dialogue with their peers. Some questions, particularly those related to ethical or societal concerns, may not have definitive answers and are intended to spark debate. For instance, a discussion about market competition might lead to a broader conversation on the impact of government regulations on different industries.

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

Microeconomics supports the development of Critical Thinking skills by enabling students to identify, define, and analyze specific economic issues like supply and demand, market structures, and price elasticity. Students learn how to collect and interpret data on consumer behavior, production costs, and market competition. This involves gathering information on factors like market prices, consumer preferences, and production efficiency. Once students have the data, they critically analyze it, examining how different variables interact and comparing various market scenarios. This analysis helps them understand economic concepts and the potential impact of different market conditions. After evaluating the evidence, students use logical reasoning to draw conclusions and make predictions. Assessments include multiple-choice exams and problem-solving exercises that test both theoretical understanding and the ability to analyze economic data through graphs and calculations.

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

Microeconomics connects to Personal & Social Responsibility by helping students understand how individual and societal economic issues intersect. In microeconomics, students examine how specific market conditions, such as supply and demand, pricing strategies, and market structures, impact both consumers and businesses. The course also explores concepts related to human capital, emphasizing the role of individuals in the economy and how their skills and decisions affect market outcomes. Ethical considerations are integrated as students evaluate the fairness of market practices, business decisions, and consumer behavior. Through discussions and collaborative projects, students increase their understanding about the importance of cooperation among stakeholders—such as businesses, consumers, and policymakers—in addressing issues like market failures, income inequality, and resource allocation. Assessment includes participation in online discussion boards, where students respond to peers' perspectives, and homework assignments that involve analyzing economic problems and forming ethical judgments.

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

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

Link to Institution's General Education Assessment Plan

[https://luna.edu/academic\\_assessment](https://luna.edu/academic_assessment)

# ECON2120 Microeconomics

## Test 2

Instructor: Aaron Smith

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Assume the price of matcha lattes increases. As a result, your real income decreases and you decrease the quantity of matcha lattes purchased each month. This is an example of the:

- a. revenue effect.
- b. income effect.
- c. substitution effect.
- d. consumer price effect.

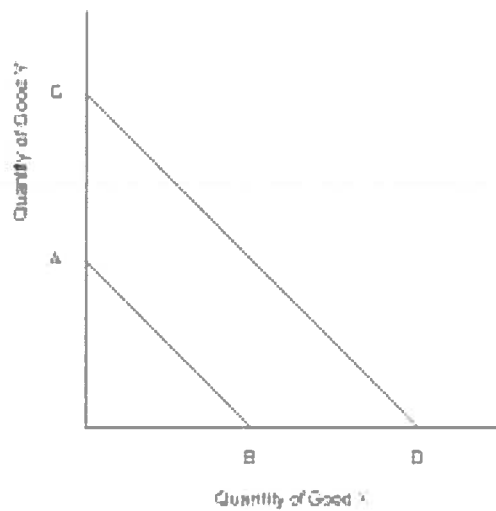
In a market with a downward-sloping demand curve and an upward-sloping supply curve, a law requiring sellers to pay the government a tax of \$1.00 per pack on cigarettes has the effect of:

- a. shifting the supply curve to the left and increasing the price buyers pay by less than \$1.00.
- b. shifting the demand curve to the left and increasing the price buyers pay by less than \$1.00.



The marginal rate of substitution \_\_\_\_\_ as one moves downward along the indifference curve.

- a. decreases
- b. increases
- c. remains constant
- d. increases and then decreases



As shown in Exhibit 6A-1, a leftward shift in the budget line from CD to AB would result from:

- a. a decrease in consumer income.
- b. a price reduction in good X.

- a. An employee of a chemical company spills acid on their arm, causing severe damage.
  
- b. Zaid buys coffee at McDonald's, spills some on himself, and burns his arm.
  
- c. A Japanese company begins to produce cars, which causes American workers to lose their jobs.
  
- d. Destiny plants fruit trees in her front yard, which attracts bees, which sting neighbor Kevin.

If a 10 percent increase in the price of product A brings about a 3 percent increase in the sales of product B, then:

- a. products A and B are substitutes.
  
- b. the demand for these products is inelastic.
  
- c. products A and B are complementary.
  
- d. the cross elasticity of demand between these two products is positive.

Why do negative externalities like pollution result in inefficiency?

- a. Because producers ignore the external costs they impose on third-parties.



## New Mexico General Education Curriculum Course Certification Form

Application Number

2379

### Institution and Course Information

Name of Institution	Luna Community College
Chief Academic Officer Name	Karen Torres
Chief Academic Officer Email	ktorres@luna.edu
Registrar Name	Alicia Chacon
Registrar Email	achacon@luna.edu
Department	STEM
Prefix	BIOL
Number	1110
Suffix	
Title	General Biology
Number of Credits	3

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	BIOL
Number	1110L
Suffix	n/a
Title	General Biology Lab

### New Mexico Common Course information

Prefix	BIOL
Number	1110
Suffix	
Title	General Biology

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

Communications     
  Mathematics     
  Science     
  Social & Behavioral Sciences  
 Humanities     
  Creative & Fine Arts     
  Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

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

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.

**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 (~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 skill. 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.*

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

To help students develop the essential skill of critical thinking, the course will guide them through various levels of cognitive engagement, which ranges from basic knowledge acquisition to higher-order skills like evaluation and creation. Through the lens of critical thinking, students will progressively build their analytical and problem-solving

capabilities as they engage with the following Course Learning Outcomes (CLOs):

Course Structure for Critical Thinking Development:

### 1. Remembering & Understanding

In the initial stages, students will remember and understand basic biological concepts such as the scientific method (CLO 1), chemical and physical principles related to cellular processes (CLO 2), and core concepts in cell biology (CLO 3). Students will engage in reading assignments, quizzes, and introductory videos. These activities are designed to ensure that students have a foundational understanding necessary for more complex tasks.

Assessment:

- Short quizzes assessing basic comprehension of key concepts.
- Reading comprehension checks on foundational topics.

### 2. Applying & Analyzing

Once students understand the basic principles, they will apply their knowledge to more specific biological scenarios. For example, students will analyze how molecular biology processes (CLO 5) or evolutionary mechanisms (CLO 6) affect biological phenomena. Group discussions, case studies, and lab activities will ask students to engage critically with real-world biological data, encouraging them to draw connections between theoretical principles and practical outcomes.

Assessment:

- Case study analysis of natural selection, requiring students to apply concepts of genetic drift and mutations.

### 3. Evaluating & Creating

Students will assess the mechanisms of evolution, species classification (CLO 7), and phylogenetic relationships (CLO 8) using the scientific method. Students will also explore the broader implications of biological diversity and conservation efforts (CLO 9). At this stage, students will engage in more open-ended projects, such as designing experiments, writing research papers, or participating in debates on contemporary biological issues (CLO 10). This will foster deeper critical thinking by requiring students to synthesize and evaluate complex information, assess varying perspectives, and propose innovative solutions.

Assessment:

- Research papers where students critically assess the importance of the scientific method in addressing contemporary issues (CLO 10).
- Experimental design assignments that require students to propose hypotheses and methods based on evolutionary theory.
- Class debates or discussions on the value of biodiversity and conservation, integrating concepts from across the course (CLO 9).

Narrative of Skill Development:

Starting with a foundational understanding of core biological principles, students will advance to applying this knowledge in various biological contexts and analyzing the relationships between concepts like evolution, molecular biology, and species classification. As they engage with complex biological problems, students will be asked to evaluate and critique different biological theories, propose their own solutions, and create meaningful connections between scientific concepts and societal issues.

Assessing Learning Outcomes:

Critical thinking will be assessed through a combination of formative and summative assessments. Formative assessments will include quizzes, discussions, and lab activities, while summative assessments will feature more comprehensive evaluations like research papers, experimental designs, and debates. These assessments will ensure students are not only learning content but are also honing their ability to think critically, analyze data, and evaluate information in complex biological systems.

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

In this course, students will develop Quantitative Reasoning as they engage with biological data, apply mathematical and statistical techniques, and analyze patterns in biological systems. Students will progress from understanding fundamental biological and quantitative concepts to applying them in complex problem-solving scenarios. This skill is crucial for understanding key biological principles like evolution, molecular biology, and biodiversity, all of which require interpreting and analyzing quantitative data.

Course Structure for Quantitative Reasoning Development:

1. Remembering & Understanding

Students will begin by remembering and understanding basic biological concepts and the role of quantitative methods in biology. For example, students will learn the value of the scientific method (CLO 1) and how it involves formulating testable predictions using quantitative reasoning. They will also learn how chemical and physical principles (CLO 2) and cell biology (CLO 3) are understood and analyzed through quantitative data, such as measuring concentrations of molecules or tracking cellular processes over time.

Assessment:

- Quizzes on basic quantitative concepts, such as interpreting graphs, measurements, and data related to cellular processes.
- Homework exercises on understanding how quantitative methods are used in molecular biology or physical processes at the cellular level.

2. Applying & Analyzing

As students advance, they will apply quantitative reasoning to real biological data, analyzing the relationships between biological variables. For example, when studying evolutionary mechanisms (CLO 6), students will apply population genetics formulas to analyze allele frequencies over time or calculate the impact of genetic drift. Similarly, students will use quantitative reasoning when studying species classification and phylogenetic relationships (CLO 7 and 8), working with datasets to infer evolutionary connections.

In this phase, students will learn how to manipulate data sets, create graphs, and interpret statistical outputs to understand biological trends, such as changes in biodiversity (CLO 9).

Assessment:

- Data-driven case studies where students must calculate the impact of evolutionary mechanisms, such as natural selection, genetic drift, or gene flow, on a population.

3. Evaluating & Creating

Students will engage in evaluating biological research using quantitative data and ultimately creating their own hypotheses and experiments involving quantitative analysis. For example, when addressing contemporary biological issues (CLO 10), students will use quantitative reasoning to evaluate the impact of environmental changes, such as habitat loss or climate change, on species diversity. They will learn how to assess the effectiveness of conservation strategies using population models or biodiversity indices.

Students will also create their own research proposals, incorporating quantitative methods, to solve real-world biological problems. This will involve designing experiments that collect and analyze data, allowing them to make informed conclusions based on quantitative evidence.

Assessment:

- Research projects where students design experiments that require quantitative analysis, such as measuring biodiversity before and after an environmental disturbance or modeling population dynamics in a changing ecosystem.
- Final reports where students critically evaluate scientific studies, interpreting data from peer-reviewed

biological research, and assessing the strength of the quantitative methods used.

Narrative of Skill Development:

Students will develop Quantitative Reasoning by progressing from understanding basic biological concepts to applying sophisticated quantitative methods in data analysis and experimentation. Using quantitative skills, students will evaluate biological research, analyze real-world problems, and develop solutions based on mathematical and statistical analysis. They will learn to manipulate data sets, draw meaningful conclusions, and propose scientifically sound solutions to complex biological issues.

Assessing Learning Outcomes:

Quantitative reasoning will be assessed through a variety of assignments and activities that emphasize data analysis, interpretation, and application to biological contexts. This will include quizzes on basic quantitative skills and final projects where they apply quantitative reasoning to evaluate real-world biological issues. By the end of the course, students will demonstrate the ability to think critically and quantitatively about biological phenomena.

**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 course, students will develop the essential skill of Personal and Social Responsibility by understanding their role in the biological sciences and its connection to global and societal issues. Students will progress from basic knowledge acquisition to complex, socially responsible actions, particularly in the context of biodiversity, conservation, and the role of science in society. This will encourage ethical decision-making, awareness of societal impacts, and a sense of responsibility for the environment and scientific processes.

Course Structure for Personal & Social Responsibility Development:

### 1. Remembering & Understanding

Initially, students will remember and understand fundamental biological concepts, such as the scientific method (CLO 1) and chemical principles at the cellular level (CLO 2). Understanding these core ideas helps students build the foundation necessary to grasp the broader social and ethical implications of biology. In lectures, students will explore how scientific understanding, and methods apply to societal needs, particularly in the context of global challenges like conservation and species diversity (CLO 9).

Assessment:

- Quizzes that check comprehension of biological principles with a focus on their societal implications.
- Short reflection papers on the social value of the scientific method in addressing biological issues.

### 2. Applying & Analyzing

As students gain more knowledge, they will apply these concepts to real-world issues and analyze their implications. For example, they will explore how evolutionary mechanisms (CLO 6) and the criteria for species status (CLO 7) affect conservation efforts, biodiversity, and the health of ecosystems (CLO 9). Group activities will focus on ethical debates about conservation strategies, the impact of human activity on biodiversity, and the role of science in policy-making.

Assessment:

- Group discussions or debates about contemporary biological issues, such as species extinction or genetic modification, focusing on the personal and societal responsibilities of scientists and citizens.
- Case study analyses where students assess the biological, social, and ethical dimensions of an environmental issue, such as deforestation or habitat loss.

### 3. Evaluating & Creating

Students will evaluate the ethical dimensions of biological conservation, species diversity, and societal responsibility

(CLO 9). They will engage with contemporary issues by critically assessing the use of the scientific method (CLO 10) in tackling these problems, such as through research on climate change or biodiversity loss. By the end of the course, students will create action plans or proposals that address a biological issue while considering societal responsibilities, such as developing conservation programs or public awareness campaigns.

Assessment:

- Final projects where students propose solutions to real-world biological issues, incorporating scientific, personal, and social considerations (e.g., designing a species conservation plan or an environmental advocacy campaign).
- Research papers evaluating the importance of the scientific method in solving societal and biological problems, with a focus on ethical decision-making and responsibility.

Narrative of Skill Development:

Students will develop Personal and Social Responsibility by understanding how biology connects to societal issues, evaluating their personal roles in addressing these issues, and actively engaging in ethical decision-making. As they progress through the semester levels, they will build from understanding core biological principles to applying these concepts to societal challenges. Ultimately, students will learn to approach contemporary biological issues like biodiversity loss, ecosystem degradation, and the ethics of conservation with a sense of personal responsibility and commitment to social change.

Assessing Learning Outcomes:

Personal and social responsibility will be assessed through both individual and collaborative assignments. These will include reflective writing, case studies, group discussions, and projects that require students to connect biological concepts to societal impacts. Assessments will measure students' ability to apply ethical reasoning, evaluate social implications, and propose responsible actions to address biological and environmental challenges.

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

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

Link to Institution's General Education Assessment Plan

[https://luna.edu/academic\\_assessment](https://luna.edu/academic_assessment)



## Case Study Analysis on the Biological, Social, and Ethical Dimensions of an Environmental Issue

### Assignment Overview:

In this case study, students will assess the biological, social, and ethical dimensions of an environmental issue. Possible topics include deforestation, habitat loss, species extinction, or another current environmental challenge. The goal of this assignment is for students to apply biological principles to real-world issues while considering their social and ethical implications, encouraging them to develop a sense of personal and social responsibility.

### Instructions:

Choose one of the following environmental issues or propose your own (with instructor approval):

- Deforestation
- Habitat Loss
- Coral Reef Destruction
- Species Extinction (e.g., endangered species)
- Climate Change Impact on Ecosystems
- Pollution of Waterways and Its Effects on Marine Life

In your case study analysis, address the following components:

### Components:

#### 1. Biological Dimensions (500-600 words):

- Provide an overview of the biological concepts relevant to the issue, such as the impact on biodiversity, ecosystems, and species interactions.
- Discuss how specific biological mechanisms (e.g., evolution, genetic drift, natural selection) are affected by the environmental issue.
- Explain the long-term biological consequences of this issue, such as species extinction, loss of genetic diversity, or ecosystem collapse.

#### 2. Social Dimensions (300-400 words):

- Analyze the social implications of the issue. Who is affected (e.g., indigenous communities, farmers, urban populations), and how are they impacted?
- Discuss how the issue influences human health, economics, and communities.
- Examine any policies, laws, or regulations in place to address the issue, and assess whether they are effective.

#### 3. Ethical Dimensions (300-400 words):

- Assess the ethical considerations related to this issue. Who is responsible for the damage (e.g., corporations, governments, consumers), and what are their moral obligations?
- Discuss potential conflicts between economic development and environmental protection.
- Reflect on what ethical actions should be taken by individuals, companies, or governments to address the problem and how personal responsibility comes into play.

4. Proposed Solutions (200-300 words):

- Based on your analysis, propose potential solutions to mitigate or solve the environmental issue.
- Describe how the scientific method could be used to implement and test these solutions.
- Include considerations of both biological and social factors in your proposed solutions.

5. Conclusion (150-200 words):

- Summarize the key findings from your analysis.
- Reflect on the personal and societal responsibilities in addressing environmental challenges like this one.

Format & Submission Guidelines:

- Length: Approximately 1,500-2,000 words.
- Format: Typed, double-spaced, 12-point font, with 1-inch margins.
- Citation Style: APA format for all references and in-text citations.
- Submit your case study analysis as a Word document or PDF via the course submission portal.

Grading Rubric:

Criteria	Excellent (90-100%)	Proficient (80-89%)
Satisfactory (70-79%)		Needs Improvement (60-69%)
Unacceptable (Below 60%)		
Biological Dimensions	Thorough and accurate explanation of biological concepts, mechanisms, and long-term impacts; uses clear, relevant examples.	Clear explanation of biological concepts with minor omissions; examples provided.
Social Dimensions	Insightful analysis of social implications, with strong examples of impact on communities, economics, and policies.	Adequate analysis of social implications with relevant examples, but lacking depth.
Ethical Dimensions	In-depth ethical analysis, clearly identifying stakeholders, responsibilities, and moral obligations, with thoughtful reflection.	Adequate ethical analysis with some discussion of responsibilities and obligations.
Proposed Solutions	Thoughtful, feasible solutions that integrate biological, social, and ethical considerations; grounded in scientific reasoning.	Proposed solutions are reasonable but

lack some depth or integration of factors. | Basic solutions presented but lack clear connection to analysis or scientific method. | Solutions are vague, unfeasible, or poorly connected to the issue. | No clear solutions provided, or solutions are irrelevant to the issue. |

| Organization and Clarity | Paper is well-organized with logical flow; ideas are clearly articulated and easy to follow. | Paper is organized, but some sections may lack smooth transitions or clarity. | Basic organization, but some ideas are unclear or poorly connected. | Poor organization; ideas are hard to follow or disjointed. | Lacks organization and clarity, making the paper difficult to understand. |

| Grammar, Syntax, and Formatting | Free of grammatical, spelling, and formatting errors; follows APA citation style accurately. | Minor errors in grammar, spelling, or formatting that do not detract from readability. | Several grammatical or formatting errors that mildly affect readability. | Frequent grammatical or formatting errors that significantly impede readability. | Numerous errors in grammar, spelling, or formatting; improper or missing citations. |

Total: /100

Weighting:

- Biological Dimensions: 25%
- Social Dimensions: 20%
- Ethical Dimensions: 20%
- Proposed Solutions: 15%
- Organization and Clarity: 10%
- Grammar, Syntax, and Formatting: 10%

Criteria	Excellent (90-100%)	Proficient (80-89%)	Satisfactory (70-79%)	Needs Improvement (60-69%)	Unacceptable (Below 60)
Biological Dimensions	Thorough and accurate explanation of biological concepts, mechanisms, and long-term impacts; uses clear, relevant examples.	Clear explanation of biological concepts with minor omissions; examples provided.	Basic explanation of biological concepts; lacks depth or detail in examples.	Incomplete or inaccurate explanation of biological concepts; examples are missing or irrelevant.	No clear explanation of biological dimensions or major misunderstandings present.
Social Dimensions	Insightful analysis of social implications, with strong examples of impact on communities, economics, and policies.	Adequate analysis of social implications with relevant examples, but lacking depth.	Basic social analysis with minimal or weak examples.	Shallow or incomplete analysis of social aspects, with few or no examples.	No meaningful analysis of social dimensions.
Ethical Dimensions	In-depth ethical analysis, clearly identifying stakeholders, responsibilities, and moral obligations, with thoughtful reflection.	Adequate ethical analysis with some discussion of responsibilities and obligations.	Basic ethical discussion, but lacking depth or reflection.	Minimal ethical analysis with superficial engagement or unclear responsibilities.	No ethical analysis or failure to engage with key moral questions.
Proposed Solutions	Thoughtful, feasible solutions that integrate biological,	Proposed solutions are reasonable but lack some depth or	Basic solutions presented but lack clear connection to	Solutions are vague, unfeasible,	No clear solutions provided, or solutions are



## New Mexico General Education Curriculum Course Certification Form

Application Number

2381

### Institution and Course Information

Name of Institution	Luna Community College
Chief Academic Officer Name	Karen Torres
Chief Academic Officer Email	ktorres@luna.edu
Registrar Name	Alicia Chacon
Registrar Email	achacon@luna.edu
Department	STEM
Prefix	BIOL
Number	1110L
Suffix	
Title	General Biology Lab
Number of Credits	1

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	n/a
Number	n/a
Suffix	n/a
Title	n/a

### New Mexico Common Course information

Prefix	BIOL
Number	1110L
Suffix	
Title	General Biology Lab

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

Communications     
  Mathematics     
  Science     
  Social & Behavioral Sciences  
 Humanities     
  Creative & Fine Arts     
  Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

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.

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 (~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 skill. 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.*

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

In this laboratory course, students will cultivate Critical Thinking by engaging in activities that require them to analyze, evaluate, and apply biological concepts. The aim is for students to develop the ability to think critically about scientific data and its implications, making reasoned judgments based on evidence and scientific reasoning.

1. Remembering & Understanding

- Understanding Concepts: At the start of the course, students will remember and understand fundamental biological concepts such as the scientific method (CLO 1) and basic cell biology (CLO 3). They will conduct simple experiments to reinforce these concepts, such as examining cell structures under a microscope or

conducting basic chemical tests.

- Assessing Knowledge: Students will explain how chemical and physical principles apply to biological processes (CLO 2) and understand how these principles relate to broader biological contexts.

Assessment:

- Quizzes and lab reports that test understanding of fundamental concepts and their applications.  
- Short answer questions and reflections that require students to explain key principles and their relevance to experimental outcomes.

## 2. Applying & Analyzing

- Application of Knowledge: Students will apply biological principles to complex experiments, such as analyzing molecular biology processes (CLO 5) and evolutionary mechanisms (CLO 6). For instance, they

might perform experiments to observe evolutionary changes in microbial populations.

- Analysis: They will analyze experimental data to understand the implications of their findings. For example, students will analyze how specific evolutionary mechanisms affect genetic diversity or how different species interact within an ecosystem.

Assessment:

- Data analysis exercises where students interpret experimental results and connect them to biological concepts (e.g., analyzing the effects of genetic mutations on microbial growth).  
- Laboratory reports where students evaluate their experimental design, results, and conclusions, demonstrating their ability to apply critical thinking to their work.

## 3. Evaluating & Creating

- Evaluation: Students will evaluate scientific research and experimental designs to assess their validity and reliability. They will critically examine how well the scientific method (CLO 1) was used to address a biological question (CLO 10), such as evaluating a study on species conservation.  
- Creation: Students will create new experimental approaches or propose hypotheses based on their analyses. For example, they may design a lab experiment to test a new hypothesis about genetic variation or species adaptation, incorporating elements of the scientific method and biological concepts.

Assessment:

- Peer-reviewed presentations where students evaluate and critique each other's experimental designs and interpretations, providing constructive feedback based on scientific reasoning.  
- A final project where students design and conduct their own experiment, addressing a biological question and justifying their approach using critical thinking and evidence from their coursework.

### Assessment of Critical Thinking Learning

- Lab Reports: Detailed reports where students describe their experiments, analyze results, and critically evaluate their findings in the context of biological theories and principles. This includes assessing the effectiveness of their experimental methods and the validity of their conclusions.  
- Data Analysis Exercises: Exercises that require students to interpret complex data sets, make connections between data and theoretical concepts, and provide a reasoned analysis of their findings.  
- Peer Review and Presentations: Students will present their experimental designs and results to the class, receiving feedback on their critical analysis and the robustness of their scientific reasoning. They will also evaluate and critique their peers' presentations, fostering a collaborative environment for critical thinking.  
- Final Project: An individual or group project where students design and conduct an experiment to address a biological question. They will submit a comprehensive report that includes their hypothesis, methodology, data analysis, and a critical evaluation of their results and their relevance to the broader scientific context.

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

Course Structure to Foster Quantitative Reasoning:

In this laboratory course, students will develop the essential skill of quantitative reasoning by engaging in activities that require data collection, analysis, and interpretation, especially in relation to biological processes. Students will start by remembering basic concepts and progress to applying, analyzing, evaluating, and creating solutions to biological problems using quantitative data. Each lab will help students practice skills like using data to support scientific conclusions, understanding rates of biological processes, and analyzing evolutionary mechanisms quantitatively.

1. Remembering & Understanding:

- Students will begin by recalling and understanding key biological concepts from the lecture and how they relate to quantitative data in lab settings. This includes explaining the value of the scientific method (CLO 1) and recognizing chemical and physical principles in cellular biology (CLO 2).

- Lab Activity Example: During an introductory lab, students will measure reaction rates of enzymes under different conditions (e.g., temperature, pH) to understand enzyme kinetics at the cellular level.

- Assessment: Short quizzes after each lab, testing students' comprehension of basic quantitative principles, such as calculating rates and understanding units of measurement.

2. Applying:

- Students will apply their understanding of quantitative reasoning by performing calculations and interpreting data to answer biological questions. For example, when studying molecular biology (CLO 5), students will quantify the rate of DNA replication under various conditions.

- Lab Activity Example: In a lab focused on molecular biology, students will use a spectrophotometer to measure the concentration of DNA in different samples and apply this data to understand cellular processes.

- Assessment: Lab reports where students calculate data from experiments, interpret graphs, and explain how quantitative data reflects biological mechanisms (e.g., enzyme activity, DNA concentration).

3. Analyzing:

- In this stage, students will learn to analyze complex biological phenomena through the use of quantitative data. For example, in studying evolution (CLO 6), students will analyze genetic drift or natural selection by collecting data from simulated populations.

- Lab Activity Example: Students will engage in a population genetics simulation where they collect data on allele frequencies over multiple generations and use statistical methods to analyze evolutionary trends.

- Assessment: Data analysis exercises where students perform statistical tests (e.g., Chi-square test) to evaluate the significance of changes in allele frequencies in populations.

4. Evaluating:

- As students move into higher levels of cognitive processing, they will evaluate the effectiveness of their quantitative approaches. They will critique experimental designs, question the accuracy of their data, and propose improvements to methods used.

- Lab Activity Example: During a biodiversity and conservation lab (CLO 9), students will evaluate data collected from field studies (e.g., species population counts) and use quantitative methods to determine biodiversity indices.

- Assessment: Students will write a reflective report, evaluating the limitations of their data collection methods, discussing potential sources of error, and suggesting alternative approaches.

5. Creating:

-Students will create new knowledge by designing experiments and developing hypotheses based on quantitative data analysis. They will also integrate the scientific method (CLO 1, CLO 10) to address contemporary biological issues quantitatively.



- Lab Activity Example: For their final lab project, students will design and execute their own experiment to investigate an environmental or biological issue (e.g., the effect of pollution on water quality). They will collect, analyze, and present their quantitative data.

- Assessment: Students will present their findings in a formal lab report and oral presentation, including a complete statistical analysis of their data and interpretation of the results.

Assessing Quantitative Reasoning:

#### 1. Lab Reports:

Lab reports will assess students' ability to accurately perform calculations, interpret data, and link quantitative data to biological processes. Students will be graded on:

- Accuracy of calculations (e.g., enzyme reaction rates, allele frequencies).
- Proper interpretation of data (e.g., explaining trends in graphs).
- Application of quantitative data to explain biological principles.

#### 2. Data Analysis Exercises:

These exercises will focus on the students' ability to use statistical tools (e.g., mean, standard deviation, Chi-square tests) to analyze experimental data. Students will be assessed on:

- Correct use of statistical methods.
- Interpretation of results in a biological context.
- Understanding and discussing the significance of their findings.

#### 3. Final Project:

The final project will require students to design their own experiment, collect and analyze quantitative data, and present their findings. Assessment will include:

- The clarity of the hypothesis and experimental design.
- Data collection and analysis (including statistical methods).
- Presentation of results, both in written and oral forms.

**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 laboratory course, students will engage in hands-on experiments that align with the Personal and Social Responsibility essential skill by examining real-world biological and environmental issues.

#### Remembering & Understanding

- In the early lab sessions, students will understand and explain fundamental biological concepts, such as the value of the scientific method (CLO 1) and chemical principles in cellular biology (CLO 2). They will conduct basic experiments that reinforce these concepts, such as observing cell behavior under varying chemical conditions.
- Lab activities will include guided discussions on how scientific discoveries impact society, linking cellular processes (CLO 3) to broader issues like healthcare or agriculture.

Assessment:

- Lab quizzes testing their understanding of the scientific method and cellular processes, with questions connecting experiments to societal applications.
- Reflective journals where students briefly discuss how the knowledge they gained could affect real-world issues.

#### 2. Applying & Analyzing

- As students progress, they will apply these biological principles to more complex lab work, such as investigating molecular biology processes (CLO 5) or simulating natural selection and evolutionary mechanisms (CLO 6). This stage emphasizes the societal and ethical implications of biological research.
- For example, a lab exercise may involve students testing how environmental changes (e.g., pollution or habitat

loss) affect bacterial growth, linking biodiversity conservation (CLO 9) to societal responsibilities like environmental stewardship.

Assessment:

- Group projects where students design and execute experiments to test biological hypotheses related to conservation or public health.
- A case study on a current environmental issue where students analyze its biological, social, and ethical dimensions (e.g., the impact of pollution on marine ecosystems).

### 3. Evaluating & Creating

- At this stage, students will evaluate the societal implications of their experiments. They will use the scientific method (CLO 1, CLO 10) to create solutions to contemporary biological challenges, such as proposing conservation strategies or ethical guidelines for genetic research.
- For instance, students may participate in a long-term lab project focused on biodiversity, where they evaluate human impacts on ecosystems (CLO 9) and discuss potential policy changes or conservation actions that could mitigate these effects.

Assessment:

- A final lab report where students propose solutions to a biological or environmental issue they have studied, supported by experimental data.
- Oral presentations where they discuss the ethical considerations of their findings, addressing societal responsibility and suggesting policy or behavioral changes.

### Assessment of Personal & Social Responsibility Learning

- Reflective Journals: Students will write weekly reflections on how their lab experiments connect to personal and social responsibility, considering how biological knowledge can inform ethical decisions and impact societal challenges (e.g., addressing climate change or disease prevention).
- Case Study Analysis: In this assignment, students will select an environmental issue (e.g., habitat loss) and assess it from biological, social, and ethical perspectives. They will evaluate their role as both scientists and global citizens in addressing these challenges.

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

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

Link to Institution's General Education Assessment Plan

[https://luna.edu/academic\\_assessment](https://luna.edu/academic_assessment)

## **Assignment: Case Study Analysis of an Environmental Issue**

### **Objective:**

To develop critical thinking and personal responsibility by analyzing an environmental issue from biological, social, and ethical perspectives. Students will evaluate their role as scientists and global citizens in addressing these challenges and propose actionable solutions.

### **Assignment Overview:**

In this case study analysis, students will select an environmental issue of their choice or from a provided list. They will research and analyze the issue from three key perspectives—biological, social, and ethical. The analysis will culminate in a detailed report that assesses the issue's impact and proposes solutions, integrating their understanding of biological concepts and societal responsibilities.

### **Instructions:**

1. **Select an Environmental Issue:** Choose one of the following environmental issues or propose your own (with instructor approval):
  - Habitat Loss
  - Deforestation
  - Pollution (air, water, or soil)
  - Climate Change
  - Species Extinction
  - Ocean Acidification
2. **Research and Analysis:**
  - **Biological Perspective:**
    - **Research** the biological impacts of the issue. Discuss how it affects ecosystems, species diversity, and biological processes. For instance, if analyzing habitat loss, describe how it impacts local flora and fauna, and the overall biodiversity of the area.
    - **Analyze** any relevant biological data or case studies. Consider how concepts such as evolutionary mechanisms (CLO 6) or species classification (CLO 8) relate to the issue.
  - **Social Perspective:**
    - **Assess** the social implications of the issue. Identify and discuss the affected communities or populations, including their socio-economic status, health impacts, and cultural significance.
    - **Evaluate** current policies, regulations, or community responses related to the issue. Discuss their effectiveness and any potential improvements.
  - **Ethical Perspective:**
    - **Examine** the ethical dimensions of the issue. Consider the moral responsibilities of individuals, corporations, and governments in relation to the problem.
    - **Discuss** conflicts between economic development and environmental protection, and explore ethical solutions that could balance these interests.
3. **Propose Solutions:**

- Based on your analysis, propose practical and feasible solutions to mitigate or address the environmental issue. Your solutions should integrate biological, social, and ethical considerations.
  - Explain how these solutions could be implemented and tested using scientific methods (CLO 1) and how they would impact the different stakeholders involved.
- 4. Reflect on Personal and Social Responsibility:**
- Reflect on your role as both a scientist and a global citizen in addressing the issue. Consider how your understanding of biological concepts (CLOs 2-10) informs your responsibility towards environmental sustainability and social equity.
  - Discuss any actions you can take personally or professionally to contribute to resolving the issue.
- 5. Submit Your Case Study Analysis:**
- Length: 2,500-3,000 words
  - Format: Typed, double-spaced, 12-point font, with 1-inch margins
  - Citation Style: APA format for all references and in-text citations
  - Include a title page, an introduction, sections for each perspective (biological, social, ethical), a proposed solutions section, a reflection section, and a conclusion.
- 6. Grading Rubric:**

Criteria	Excellent (90-100%)	Proficient (80-89%)	Satisfactory (70-79%)	Needs Improvement (60-69%)	Unacceptable (Below 60%)
<b>Biological Analysis</b>	In-depth, accurate analysis of biological impacts with strong integration of concepts and data.	Clear analysis of biological impacts with minor gaps or omissions.	Basic analysis of biological impacts, lacks depth or some inaccuracies.	Incomplete or inaccurate analysis of biological impacts.	No meaningful biological analysis or major misunderstandings present.
<b>Social Analysis</b>	Insightful assessment of social implications with detailed examples and critical evaluation.	Adequate assessment with relevant examples and basic evaluation.	Basic assessment with minimal examples and evaluation.	Shallow assessment with few examples and unclear evaluation.	No clear assessment of social dimensions or irrelevant content.
<b>Ethical Analysis</b>	Comprehensive examination of ethical considerations with well-supported	Adequate examination of ethical considerations with some	Basic ethical discussion with limited support and reflection.	Minimal ethical discussion with superficial or	No meaningful ethical analysis or major misunderstandings.

<b>Criteria</b>	<b>Excellent (90-100%)</b>	<b>Proficient (80-89%)</b>	<b>Satisfactory (70-79%)</b>	<b>Needs Improvement (60-69%)</b>	<b>Unacceptable (Below 60%)</b>
	arguments and reflections.	support and reflection.		unclear arguments.	
<b>Proposed Solutions</b>	Thoughtful, feasible solutions with clear integration of biological, social, and ethical considerations.	Reasonable solutions with some integration of considerations, though lacking depth.	Basic solutions presented with limited integration or feasibility.	Vague or unfeasible solutions with poor integration of considerations.	No clear solutions provided or irrelevant to the issue.
<b>Personal and Social Responsibility Reflection</b>	Deep, thoughtful reflection on personal and social responsibility, with strong connection to course concepts.	Adequate reflection with some connection to course concepts.	Basic reflection with minimal connection to course concepts.	Limited reflection with weak connection to course concepts.	No meaningful reflection or connection to course concepts.
<b>Organization and Clarity</b>	Well-organized, clear, and logical flow; ideas are well-articulated.	Mostly organized, with some clarity issues or minor disorganization.	Basic organization; some ideas may be unclear or disjointed.	Poor organization; ideas are hard to follow or disjointed.	Disorganized and unclear; difficult to follow.
<b>Grammar, Syntax, and Formatting</b>	Free of grammatical, spelling, and formatting errors; APA citations are accurate.	Minor errors in grammar, spelling, or formatting; APA citations mostly accurate.	Several grammatical or formatting errors; some APA citation issues.	Frequent errors in grammar, spelling, or formatting; APA citations often incorrect.	Numerous errors in grammar, spelling, or formatting; improper or missing APA citations.



## New Mexico General Education Curriculum Course Certification Form

Application Number

2382

### Institution and Course Information

Name of Institution	LCC
Chief Academic Officer Name	Karen Torres
Chief Academic Officer Email	ktorres@luna.edu
Registrar Name	Alicia Chacon
Registrar Email	achacon@luna.edu
Department	STEM
Prefix	CHEM
Number	1120
Suffix	
Title	Introduction to Chemistry
Number of Credits	3

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	CHEM
Number	1120L
Suffix	
Title	Introduction to Chemistry Lab

### New Mexico Common Course information

Prefix	CHEM
Number	1120
Suffix	
Title	Introduction to Chemistry

### A. Content Area and Essential Skills

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

Communications     
  Mathematics     
  Science     
  Social & Behavioral Sciences  
 Humanities     
  Creative & Fine Arts     
  Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

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.

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 (~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 skill. 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.*

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

In this course, students will enhance their critical thinking skills by engaging in activities that require them to analyze, evaluate, and apply chemical concepts to solve complex problems. The curriculum is designed to encourage deep understanding and thoughtful inquiry, allowing students to make connections between concepts and approach

chemistry with an analytical mindset. Below are examples of how students will develop critical thinking through specific Course Learning Outcomes and the methods that will be used to assess their learning.

### 1. Systems of Measurements and Conversions

- Activities: Students will solve real-world problems that involve selecting appropriate measurement systems and performing complex conversions between units. They will assess the implications of measurement accuracy and precision in scientific experiments.

- Assessment: Quizzes and assignments will evaluate students' ability to accurately perform conversions and critically reflect on the choice of measurement systems in various contexts.

### 2. Periodic Table and Reactivity Patterns

- Activities: Students will investigate periodic trends and use them to predict the reactivity of elements and the formation of compounds. They will analyze case studies where exceptions to periodic trends occur, encouraging them to question and interpret these anomalies.

- Assessment: Written reports and group presentations will assess students' ability to interpret data, draw conclusions about element behavior, and justify their predictions based on periodic trends.

### 3. Atomic Structure and Nuclear Reactions

- Activities: By exploring subatomic particles and atomic models, students will evaluate how atomic structure influences nuclear reactions. They will interpret nuclear equations and predict the outcomes of nuclear processes.

- Assessment: Exams and problem sets will test students' ability to apply their understanding of atomic structure to explain nuclear reactions and to critically assess the stability of different isotopes.

### Assessment of Critical Thinking

Students' critical thinking skills will be assessed through a variety of methods:

- Written Assignments: Essays and reports will require students to articulate their reasoning, analyze complex concepts, and synthesize information from multiple sources.

- Problem-Solving Exercises: Regular problem sets will challenge students to apply concepts to unfamiliar situations, encouraging them to think creatively and logically.

- Class Discussions and Debates: Participating in discussions will help students consider different perspectives, defend their viewpoints, and engage in analytical dialogue with peers.

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

Throughout this course, students will enhance their quantitative reasoning skills by engaging in activities that require the application of mathematical concepts to chemical phenomena. The course is designed to integrate quantitative analysis into the understanding of chemical principles, allowing students to interpret data, solve problems, and make informed decisions based on numerical information. The following examples demonstrate how students will enhance their quantitative reasoning skills.

#### 1. Measurement Systems and Conversions

- Activities: Students will perform experiments that involve measuring mass, volume, temperature, and pressure using different units. They will practice converting measurements within the metric system and between metric and imperial systems.

- Assessment: Quizzes and lab reports will evaluate students' ability to accurately perform unit conversions and use appropriate significant figures in their calculations.

#### 2. Periodic Table and Element Reactivity

- Activities: Students will analyze numerical data such as atomic numbers, atomic masses, and electronegativity



values to identify elements and predict their chemical behavior. They will use trends in the periodic table to anticipate compound formation.

- Assessment: Homework assignments and exams will include problems that require interpreting periodic trends quantitatively and predicting reactivity patterns.

### 3. Atomic Structure and Nuclear Reactions

- Activities: By calculating the number of protons, neutrons, and electrons in various isotopes, students will explore atomic structures. They will apply mathematical concepts to balance nuclear equations and understand radioactive decay processes.

- Assessment: Assessments will consist of problem sets where students compute atomic masses and balance nuclear reactions, demonstrating their quantitative understanding of atomic structures.

#### Assessment of Quantitative Reasoning

Students' quantitative reasoning skills will be assessed through a variety of methods:

- Laboratory Reports: Students will present data collected during experiments, perform necessary calculations, and interpret their findings quantitatively. Reports will be graded on accuracy, clarity, and the correct application of mathematical principles.

- Homework and Problem Sets: Regular assignments will include quantitative problems that reinforce concepts learned in class. These will help assess students' ability to apply mathematical methods to new situations.

- Quizzes and Exams: Timed assessments will test students' proficiency in performing calculations, solving equations, and interpreting numerical data under exam 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 course, students will cultivate the essential skill of personal and social responsibility by engaging in activities that highlight the impact of chemistry on individuals, society, and the environment. Through the exploration of chemical principles, students will become more aware of how their actions and decisions as learners and future professionals can affect the world around them. Below is a narrative of how students will develop this skill through specific Course Learning Outcomes and the methods that will be used to assess their learning.

#### 1. Systems of Measurements and Conversions

- Activities: Students will explore the importance of accurate measurements and conversions in real-world contexts, such as in healthcare, engineering, and environmental science. They will discuss scenarios where measurement errors can lead to significant societal consequences, emphasizing the responsibility of scientists to ensure precision.

- Assessment: Reflective essays will assess students' understanding of the ethical implications of measurement accuracy and their commitment to meticulous work.

#### 2. Periodic Table and Reactivity Patterns

- Activities: By studying the periodic table and reactivity patterns, students will examine how the discovery and use of elements have impacted society, including both beneficial applications and harmful effects (e.g., heavy metal pollution). They will participate in discussions about sustainable practices and the responsible use of resources.

- Assessment: Group presentations will evaluate students' ability to research and communicate the societal impacts of specific elements, promoting awareness of environmental stewardship.

#### 3. Atomic Structure and Nuclear Reactions

- Activities: Students will delve into nuclear chemistry, exploring both the potential benefits (such as medical imaging and cancer treatments) and risks (like nuclear waste and weaponry) associated with nuclear reactions. They will debate ethical considerations surrounding nuclear technology and its regulation.

- Assessment: Debates and position papers will assess students' ability to articulate informed opinions on nuclear issues, demonstrating critical thinking and ethical reasoning.

#### Assessment of Personal and Social Responsibility

Students' development of personal and social responsibility will be assessed through:

- Reflective Essays and Journals: Students will articulate their understanding of how chemistry affects society and the environment, reflecting on their personal values and responsibilities.

- Group Projects and Presentations: Collaborative assignments will allow students to engage with peers, fostering teamwork and collective responsibility in addressing chemical issues.

- Debates and Discussions: Participation in class debates will assess students' ability to consider multiple perspectives, engage in ethical reasoning, and communicate respectfully.

- Case Studies and Research Projects: In-depth analyses of real-world issues will require students to apply chemical knowledge to societal challenges, demonstrating their commitment to responsible action.

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

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

Link to Institution's General Education Assessment Plan

[https://luna.edu/academic\\_assessment](https://luna.edu/academic_assessment)

## Final Project: Comprehensive Quantitative Analysis in Chemistry

### Assignment Overview:

This final project is a comprehensive assessment designed to integrate and apply the quantitative skills you have acquired throughout the course. You will engage in a complex experiment or analyze a real-world chemical problem that encompasses multiple Course Learning Outcomes (CLOs). The project will require you to demonstrate proficiency in measurements and conversions, chemical calculations, stoichiometry, gas laws, energy changes, and acid-base chemistry.

### Objectives:

- Apply different systems of measurements and perform complex unit conversions.
- Utilize the periodic table to predict chemical behavior and compound formation.
- Analyze atomic structures and nuclear reactions quantitatively.
- Calculate and predict ionic and covalent compound formations.
- Balance chemical equations and perform stoichiometric calculations.
- Interpret and apply gas laws to experimental data.
- Calculate energy changes in chemical reactions.
- Analyze acid-base reactions and buffer systems quantitatively.

### Project Options:

You may choose **one** of the following project options or propose your own (subject to instructor approval):

1. **Design and Conduct an Experiment:**
  - **Example Topic:** Investigate the efficiency of different antacid tablets in neutralizing stomach acid.
  - **Description:** Design an experiment to compare the neutralizing capacity of various commercial antacids. You will perform titrations, calculate the amount of acid neutralized, and analyze the cost-effectiveness of each antacid.
2. **Real-World Problem Analysis:**
  - **Example Topic:** Quantitative Analysis of Carbon Dioxide Emissions from Combustion Engines.
  - **Description:** Analyze the chemical reactions involved in fuel combustion. Calculate the amount of CO<sub>2</sub> produced under different conditions and propose methods to reduce emissions based on stoichiometric calculations.
3. **Comprehensive Case Study:**
  - **Example Topic:** The Chemistry of Renewable Energy Storage.
  - **Description:** Explore the chemical principles behind batteries or fuel cells. Perform calculations related to energy storage capacity, reaction efficiencies, and discuss the implications for real-world energy solutions.

### Project Components:

Your project should include the following sections:

1. **Introduction (200-300 words):**
  - Present the topic and its relevance.
  - State the objectives of your project.
  - Briefly outline the chemical principles involved.
2. **Literature Review (400-500 words):**
  - Summarize existing research or information related to your topic.

- Cite at least three credible sources (e.g., textbooks, peer-reviewed articles).
- 3. **Methodology:**
  - **For Experimental Projects:**
    - Describe the experimental procedures in detail.
    - List materials and equipment used.
    - Explain how measurements and data collection will be conducted.
  - **For Analytical Projects:**
    - Outline the chemical reactions and processes involved.
    - Describe the quantitative methods and calculations you will perform.
- 4. **Data Collection and Analysis:**
  - Present your data in organized tables and graphs.
  - Show all calculations step-by-step, including:
    - Unit conversions.
    - Chemical formula derivations.
    - Stoichiometric calculations.
    - Gas law applications.
    - Energy change computations.
    - Acid-base titration calculations.
  - Interpret the results quantitatively.
- 5. **Discussion:**
  - Analyze the results in the context of the Course Learning Outcomes.
  - Discuss any discrepancies or errors in your data.
  - Explain the chemical significance of your findings.
- 6. **Conclusion (150-200 words):**
  - Summarize the key findings of your project.
  - Reflect on how the project helped you integrate quantitative skills.
  - Propose recommendations or future work if applicable.
- 7. **References:**
  - Provide a list of all sources cited in APA format.
- 8. **Appendices (if necessary):**
  - Include detailed calculations, additional data, or supporting materials.

**Submission Guidelines:**

- **Format:** Typed, double-spaced, 12-point Times New Roman font, 1-inch margins.
- **Length:** Approximately 2,000-2,500 words (excluding references and appendices).
- **File Type:** Submit as a PDF or Word document.

<b>Criteria</b>	<b>Excellent (90-100%)</b>	<b>Proficient (80-89%)</b>	<b>Satisfactory (70-79%)</b>	<b>Needs Improvement (60-69%)</b>	<b>Unacceptable (Below 60%)</b>
<b>Understanding of Chemical Principles</b>	Demonstrates a thorough understanding of all relevant chemical concepts; accurately applies principles to the project.	Shows good understanding with minor inaccuracies; applies most concepts correctly.	Basic understanding with some inaccuracies; applies key concepts adequately.	Limited understanding with significant inaccuracies; misapplies concepts.	Lacks understanding of fundamental concepts; fails to apply principles correctly.
<b>Quantitative Analysis and Calculations</b>	All calculations are correct, clearly shown, and appropriately used; effectively integrates multiple quantitative skills.	Calculations are mostly correct with minor errors; integrates several quantitative skills.	Some errors in calculations; integrates basic quantitative skills.	Frequent errors in calculations; limited integration of quantitative skills.	Major errors in calculations; does not demonstrate quantitative skills.
<b>Data Presentation and Interpretation</b>	Data is presented clearly with well-designed tables/graphs; interpretations are insightful and well-supported by data.	Data presentation is clear with minor issues; interpretations are reasonable and mostly supported.	Data presentation is adequate; interpretations are basic and somewhat supported.	Data is poorly presented; interpretations are unclear or poorly supported.	Data is missing or incomprehensible; interpretations are invalid or unsupported.
<b>Methodology and Experimental Design</b>	Methodology is thorough, logical, and replicable; experimental design is sound and well-justified.	Methodology is clear with minor gaps; experimental design is adequate.	Methodology is basic with some gaps; experimental design lacks detail.	Methodology is incomplete or flawed; experimental design is weak.	Methodology is absent or invalid; experimental design is unacceptable.

<b>Criteria</b>	<b>Excellent (90-100%)</b>	<b>Proficient (80-89%)</b>	<b>Satisfactory (70-79%)</b>	<b>Needs Improvement (60-69%)</b>	<b>Unacceptable (Below 60%)</b>
<b>Integration of Course Learning Outcomes</b>	Effectively integrates multiple CLOs; clearly demonstrates how the project addresses them.	Integrates several CLOs; shows good connection to the project.	Integrates some CLOs; connection is basic or lacks depth.	Minimal integration of CLOs; connections are weak or unclear.	Does not integrate CLOs; no clear connection to the project.
<b>Organization and Clarity</b>	Report is well-organized with a logical flow; writing is clear and professional.	Organization is good with minor issues; writing is mostly clear.	Basic organization; writing is understandable but may lack clarity.	Poor organization; writing is unclear or contains numerous errors.	Disorganized and difficult to read; writing is incoherent.
<b>Grammar and Mechanics</b>	Nearly flawless grammar, spelling, and punctuation.	Minor grammatical or spelling errors that do not detract from the content.	Some grammatical or spelling errors; readability is minimally affected.	Frequent errors that interfere with readability.	Numerous errors that significantly impede understanding.
<b>References and Citations</b>	All sources are properly cited in APA format; references are credible and relevant.	Sources are cited with minor formatting errors; most references are credible.	Some sources are improperly cited; references are somewhat relevant.	Few sources cited; formatting is incorrect; references lack credibility.	No citations provided; references are missing or irrelevant.



## New Mexico General Education Curriculum Course Certification Form

Application Number

2392

### Institution and Course Information

Name of Institution	LCC
Chief Academic Officer Name	Karen Torres
Chief Academic Officer Email	ktorres@luna.edu
Registrar Name	Alicia Chacon
Registrar Email	achacon@luna.edu
Department	STEM
Prefix	CHEM
Number	1120L
Suffix	
Title	Introduction to Chemistry Lab
Number of Credits	1

**Was this course previously part of the general education curriculum?**

Yes       No

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

Yes       No

### Co-Requisite Course Information

Prefix	CHEM
Number	1120
Suffix	
Title	Introduction to Chemistry

### New Mexico Common Course information

Prefix	CHEM
Number	1120L
Suffix	
Title	Introduction to Chemistry

### **A. Content Area and Essential Skills**

**To which content area should this course be added? Indicate "Other" if the course is not associated with one of the six NM General Education content areas.**

Communications     
  Mathematics     
  Science     
  Social & Behavioral Sciences  
 Humanities     
  Creative & Fine Arts     
  Flex

**Which essential skills will be addressed?**

- Communication       Critical Thinking       Information & Digital Literacy  
 Quantitative Reasoning       Personal & Social Responsibility

**B. Learning Outcomes**

List all common course student learning outcomes for the course.

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.

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 (~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 skill. 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.*



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

In this laboratory course, students will enhance their critical thinking skills by actively engaging in experiments and activities that require analysis, evaluation, and application of chemical concepts. The course is designed to move beyond rote memorization, encouraging students to question assumptions, interpret data, and solve complex problems. By directly involving students in the scientific process, they will develop a deeper understanding of chemistry and its real-world applications. See examples below:

**1. Measurement Systems and Conversions**

- Activities: Students will conduct experiments that involve precise measurements using different units and instruments. They will encounter scenarios where they must decide which measurement system is most appropriate and perform complex conversions to ensure consistency in their data.

- Critical Thinking Development: Students will analyze the accuracy and precision of different measuring devices, evaluate potential sources of error, and justify their choices of measurement systems. They will interpret how measurement inaccuracies can affect experimental outcomes.

- Assessment: Lab reports will require students to explain their measurement choices, calculate uncertainties, and reflect on how measurement errors could impact their results and conclusions.

**2. Element Identification and Reactivity Patterns**

- Activities: Through hands-on experiments, students will observe reactions between various elements and compounds. They will predict products based on periodic trends and then test their hypotheses in the lab.

- Critical Thinking Development: Students will compare their experimental results with their predictions, analyze discrepancies, and explore underlying reasons for any unexpected outcomes. They will evaluate how factors like purity of reagents or experimental conditions affect reactivity.

- Assessment: Students will write reflective essays discussing their predictions versus actual results, providing evidence-based explanations for any differences and demonstrating their ability to think critically about chemical behaviors.

**3. Atomic Structure and Nuclear Reactions**

- Activities: Students will model atomic structures using simulations and perform experiments that illustrate nuclear reactions, such as radioactive decay simulations or half-life determinations.

- Critical Thinking Development: They will interpret data from their experiments to understand nuclear stability and decay processes. Students will assess the safety and ethical considerations of nuclear chemistry applications.

- Assessment: Quizzes and lab assessments will test students' ability to analyze nuclear reaction data, draw conclusions about atomic stability, and evaluate the implications of nuclear technology.

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

In this laboratory course, students will enhance their quantitative reasoning skills by actively engaging in experiments that require precise measurements, data analysis, and mathematical calculations. The course is structured to provide hands-on experiences where students apply chemical principles to solve problems, interpret results, and make informed decisions based on quantitative data. Below is a narrative of how students will develop this essential skill through specific Course Learning Outcomes (CLOs) and the methods that will be used to assess their learning. Examples include:

**1. Measurement Systems and Unit Conversions**

- Activities: Students will perform experiments that involve measuring mass, volume, temperature, and

pressure using various instruments. They will practice converting measurements within the metric system and between metric and imperial systems to ensure accuracy and consistency in their data.

- Skill Development: By accurately measuring and converting units, students will enhance their ability to handle quantitative data and understand the importance of precision in scientific investigations.

- Assessment: Lab reports will evaluate students' proficiency in measurements and conversions, requiring them to show all calculations and justify their methods.

## 2. Element Identification and Reactivity Patterns

- Activities: Students will conduct experiments to identify unknown elements or compounds by observing chemical reactions and reactivity patterns. They will use the periodic table to predict outcomes and verify their predictions through experimentation.

- Skill Development: This process strengthens students' ability to apply quantitative reasoning to predict and interpret chemical behavior based on atomic structure and periodic trends.

- Assessment: Quizzes and practical exams will assess students' ability to use quantitative data to identify elements and predict compound formation accurately.

## 3. Atomic Structure and Nuclear Reactions

- Activities: Experiments will involve modeling atomic structures and simulating nuclear reactions.

Students will calculate atomic mass, isotopic abundance, and energy changes associated with nuclear processes.

- Skill Development: Students will develop quantitative reasoning by performing calculations related to subatomic particles and interpreting the results of nuclear reactions.

- Assessment: Assignments will require students to solve problems involving nuclear equations and energy calculations, demonstrating their understanding of atomic structure quantitatively.

**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 laboratory course, students will enhance their personal and social responsibility by actively engaging in experiments and activities that connect chemical principles to real-world issues and societal impacts. Through hands-on learning, collaborative projects, and reflective practices, students will become more aware of the ethical, environmental, and societal implications of chemistry, fostering a sense of responsibility as both scientists and global citizens. Examples include:

### 1. Measurement Systems and Conversions

- Activities: Students will perform precise measurements and conversions while preparing chemical solutions and conducting titrations. They will discuss the importance of accuracy in measurements and the potential consequences of errors in pharmaceutical dosages, environmental testing, and industrial processes.

- Assessment: Lab reports will include reflections on the ethical implications of measurement accuracy. Students will be evaluated on their ability to perform precise measurements and their understanding of how inaccuracies can affect society and the environment.

### 2. Element Identification and Reactivity Patterns

- Activities: Through experiments involving element identification and observation of reactivity patterns, students will explore how the extraction and use of certain elements impact the environment and local communities (e.g., mining of rare earth metals). They will consider sustainable practices and the responsible sourcing of materials.

- Assessment: Students will present on the environmental and social effects of extracting specific elements, demonstrating their ability to connect chemical knowledge with societal issues.

### 3. Atomic Structure and Nuclear Reactions

- Activities: In labs simulating nuclear reactions, students will examine the benefits and risks of nuclear energy and medical applications. Discussions will address nuclear waste management, radiation safety, and the ethical considerations of nuclear technology.

- Assessment: Written essays will assess students' understanding of nuclear chemistry and their ability to critically evaluate the societal responsibilities associated with nuclear science.

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

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

Link to Institution's General Education Assessment Plan

[https://luna.edu/academic\\_assessment](https://luna.edu/academic_assessment)

## Objectives

- **Apply chemical principles** from the course to novel experimental scenarios.
- **Design and execute experiments** to solve given problems.
- **Troubleshoot experimental issues** and adapt procedures as needed.
- **Analyze and interpret data** to draw logical conclusions.
- **Demonstrate critical thinking** by evaluating results and reflecting on the experimental process.

## Exam Structure

- **Duration:** 3 hours
- **Format:** Individual practical exam conducted in the laboratory.
- **Materials Provided:** Access to standard laboratory equipment, chemicals, safety gear, and a lab notebook.
- **Allowed Resources:** Periodic table, scientific calculator, and provided reference materials (no textbooks or personal notes).

## Exam Tasks

You will be presented with a series of experimental problems that relate to the Course Learning Outcomes (CLOs). Each task will require you to:

1. **Understand the Problem:** Read the scenario and identify the chemical principles involved.
2. **Design an Experiment:** Outline a procedure to investigate or solve the problem.
3. **Execute the Experiment:** Carry out the procedure safely and efficiently.
4. **Collect and Analyze Data:** Record observations, measurements, and calculate results.
5. **Troubleshoot:** Identify and address any issues that arise during the experiment.
6. **Conclude and Reflect:** Draw conclusions based on your data and reflect on the experiment's effectiveness.

## Sample Exam Problems

### Problem 1: Unknown Substance Identification

*Scenario:* You are given a white crystalline solid labeled "Sample A." Your task is to determine its identity using qualitative and quantitative analysis techniques.

- **Related CLOs:**
  - Identify elements from their name or symbol, use the periodic table to describe reactivity patterns of elements and to predict compound formation.
  - Describe ion formation and the difference between covalent and ionic compounds. Name and write formulas for ionic and simple molecular compounds.

### Tasks:

- **Design an Experiment:** Propose tests to determine whether the compound is ionic or covalent, such as solubility tests, conductivity measurements, or melting point determination.
- **Execute the Experiment:** Perform the tests safely, following proper laboratory procedures.
- **Collect Data:** Record your observations and measurements meticulously.
- **Analyze Data:** Interpret your results to deduce the identity of the substance.
- **Troubleshoot:** If a test does not yield clear results, modify your approach accordingly.
- **Conclude:** Provide a logical conclusion supported by your data.

---

### Problem 2: Reaction Yield Optimization

*Scenario:* A reaction between Solution X and Solution Y produces a precipitate of Compound Z. Your goal is to maximize the yield of Compound Z using stoichiometric calculations and experimental adjustments.

- **Related CLOs:**
  - Write and balance chemical reactions. Use balanced reactions in stoichiometric calculations.
  - Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements.

**Tasks:**

- **Design an Experiment:** Determine the optimal ratios of reactants based on stoichiometry.
  - **Execute the Experiment:** Mix the reactants in calculated proportions.
  - **Collect Data:** Isolate and measure the mass of the precipitate formed.
  - **Analyze Data:** Calculate the theoretical yield and compare it to the actual yield to determine efficiency.
  - **Troubleshoot:** Identify any factors affecting yield (e.g., incomplete reactions, measurement errors) and adjust your procedure.
  - **Conclude:** Suggest ways to improve yield based on your findings.
- 

### **Problem 3: Gas Law Application**

*Scenario:* You need to determine the molar mass of an unknown gas using experimental data.

- **Related CLOs:**
  - 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.

**Tasks:**

- **Design an Experiment:** Plan how to collect the gas, measure its volume, temperature, and pressure.
  - **Execute the Experiment:** Carefully collect the gas and record all necessary data.
  - **Collect Data:** Ensure accurate measurements for precise calculations.
  - **Analyze Data:** Use the ideal gas law to calculate the molar mass of the gas.
  - **Troubleshoot:** Address any leaks or measurement inconsistencies.
  - **Conclude:** Identify the gas based on your calculated molar mass and justify your identification.
- 

### **Problem 4: Buffer Solution Preparation**

*Scenario:* Prepare a buffer solution with a specific pH and test its capacity to resist changes upon addition of acids or bases.

- **Related CLOs:**
  - Describe acid and base behavior and the nature of buffer solutions.
  - Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements.

**Tasks:**

- **Design an Experiment:** Calculate the required amounts of acid and conjugate base to achieve the desired pH.

- **Execute the Experiment:** Prepare the buffer solution accurately.
- **Collect Data:** Measure the initial pH and record changes after adding small amounts of strong acid or base.
- **Analyze Data:** Evaluate the buffer capacity and effectiveness.
- **Troubleshoot:** If the buffer does not perform as expected, adjust concentrations accordingly.
- **Conclude:** Discuss the importance of buffers in chemical and biological systems.

### Instructions

- **Safety First:** Follow all laboratory safety protocols, including wearing appropriate personal protective equipment (PPE).
- **Time Management:** Allocate your time wisely among the tasks to ensure completion within the allotted time.
- **Documentation:** Keep detailed records of your procedures, observations, and data in your lab notebook.
- **Independent Work:** This is an individual exam; collaboration with peers is not permitted.
- **Ask Questions:** If you are unsure about safety procedures or need clarification on the task, ask the instructor or lab supervisor.

### Assessment Criteria

Your performance will be evaluated based on the following criteria:

1. **Experimental Design (20%)**
  - Ability to plan appropriate experimental procedures.
  - Justification of chosen methods.
  - Consideration of variables and controls.
2. **Execution of Experiment (20%)**
  - Proper use of laboratory equipment and techniques.
  - Adherence to safety protocols.
  - Efficiency and organization during the experiment.
3. **Data Collection and Recording (15%)**
  - Accuracy and precision of measurements.
  - Completeness and clarity of recorded data.
  - Proper use of units and significant figures.
4. **Data Analysis and Interpretation (20%)**
  - Correct calculations and use of formulas.
  - Logical interpretation of results.
  - Ability to draw conclusions supported by data.
5. **Troubleshooting and Adaptability (15%)**
  - Identification of experimental issues.
  - Effective problem-solving strategies.
  - Flexibility in adjusting procedures.
6. **Communication and Reflection (10%)**
  - Clarity in explaining your reasoning and conclusions.
  - Reflection on the experiment's effectiveness and potential improvements.
  - Neatness and organization of lab notebook entries.