



# General Education Request Application

|                    |                                                                          |
|--------------------|--------------------------------------------------------------------------|
| Application Number | 5940                                                                     |
| Institution        | CCC                                                                      |
| Applicant(s)       | deleonv@clovis.edu, robin.kuykendall@clovis.edu, melissa.reed@clovis.edu |
| Status             | NMHED_REVIEW                                                             |
| Submitted          | 2026-02-15 12:06 PM (US/Mountain)                                        |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Dr. Robin Kuykendall

### Chief Academic Officer Email

kuykendallr@clovis.edy

### Registrar Name

Kari Smith

### Registrar Email

smithka@clovis.edu

### Course's Academic Department

Communication, Fine Arts, & Humanities

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

THEA

### Number

1110

### Title

Introduction to Theatre

### Number of credits

3

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

No

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

No

## Co-requisite Course

---

### Prefix

n/a

---

### Number

n/a

---

### Title

n/a

## New Mexico Common Course Information

---

### Prefix

THEA

---

### Number

1110

---

### Title

Introduction to Theatre

## A. Content Area and Essential Skills

---

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

Creative & Fine Arts

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

Student Learning Outcomes

1. Define and discuss basic theater terms and concepts.
2. Discuss the fundamental elements of theatre, and the ways in which theatre differs from other art forms.
3. Analyze and critique the elements of a live theatrical production.
4. Identify and describe the roles of various theatre artists including actors, directors, playwrights, dramaturges, and designers.

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

n/a

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Introduction to Theatre develops the Communication essential skill by intentionally integrating Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments into its core learning activities. Because theatre is a communicative art form, students consistently analyze how meaning is created and conveyed through performance.

The course builds Genre and Medium Awareness, Application and Versatility by exposing students to multiple theatrical genres and mediums, including live theatre, filmed performances, and digital adaptations. Students learn how artistic choices—such as acting style, design elements, and staging—shape meaning differently across forms. They apply this awareness in discussions and assignments that require them to interpret and compare works across genres and mediums.

Students also develop Strategies for Understanding and Evaluating Messages as they analyze performances as complex texts. Through guided viewing, notetaking, and structured discussion, students learn to identify themes, evaluate artistic decisions, and consider cultural and historical contexts. The Major Discussion Assignment, aligned with the provided rubric, requires active listening, engagement with peers, and thoughtful interpretation of the performance, reinforcing their ability to understand and evaluate messages communicated both by the artwork and by classmates.

Finally, the course strengthens Evaluation and Production of Arguments by requiring students to articulate original insights, support interpretations with evidence, and respond to differing viewpoints respectfully. The rubric emphasizes preparation, relevance, speaking, and etiquette, ensuring that students practice forming clear arguments, evaluating others' reasoning, and contributing meaningfully to collaborative dialogue. Through these integrated practices, Introduction to Theatre provides sustained, intentional development of all components of the Communication essential skill: Genre and Medium Awareness, Application and



**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Introduction to Theatre develops the Critical Thinking essential skill by engaging students in activities that require Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion. Theatre analysis naturally demands that students interpret complex artistic choices, consider multiple perspectives, and support their interpretations with evidence.

Students practice Problem Setting by identifying key questions and interpretive challenges within each assigned play or performance. As they watch, they determine what aspects of the production—such as character motivations, design elements, or thematic concerns—require deeper inquiry. The Major Discussion Assignment reinforces this skill by asking students to arrive prepared with notes that outline the issues, ideas, or moments they want to explore.

The course strengthens Evidence Acquisition by requiring students to gather relevant information from the performance itself. Students take notes, observe staging and design choices, and identify textual or visual details that support their interpretations. The rubric's emphasis on preparation and active listening ensures that students collect evidence both from the performance and from their peers' contributions during discussion.

Students develop Evidence Evaluation as they assess the significance, credibility, and relevance of the details they have gathered. In discussion, they must determine which observations meaningfully support their interpretations and which perspectives offered by classmates challenge or refine their thinking. This process teaches students to weigh competing viewpoints and evaluate the strength of different forms of evidence. Finally, students practice Reasoning/Conclusion by articulating clear, well-supported interpretations of the performance. The rubric's categories for speaking, relevance, and etiquette require students to present arguments logically, respond to differing viewpoints respectfully, and draw conclusions grounded in evidence. Through these integrated practices, Introduction to Theatre provides sustained development of all components of the Critical Thinking essential skill: Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

Introduction to Theatre supports the Personal & Social Responsibility essential skill by engaging students in activities that develop Intercultural Reasoning and Intercultural Competence and Collaboration Skills, Teamwork, and Value Systems. Theatre provides a uniquely rich environment for students to explore diverse perspectives, engage respectfully with others, and reflect on the social and cultural dimensions of performance.

The course fosters Intercultural Reasoning and Intercultural Competence by exposing students to plays and performances from a wide range of cultural, historical, and social contexts. Students analyze how identity, culture, and worldview shape artistic expression and audience interpretation. Through guided viewing and discussion, they learn to recognize cultural nuance, consider perspectives different from their own, and engage thoughtfully with themes related to race, gender, class, and global experience. The Major Discussion Assignment reinforces this component by requiring students to listen attentively, respond respectfully, and make connections between the performance and broader human experiences.

The course also develops Collaboration Skills, Teamwork, and Value Systems through structured, discussionbased learning. The Major Discussion Rubric emphasizes preparation, active listening, relevance, and etiquette, requiring students to contribute original ideas while also supporting and building on the contributions of others. Students practice working collaboratively to interpret complex material, negotiate differing viewpoints, and maintain a respectful, inclusive environment. These expectations help students

develop the interpersonal skills, shared responsibility, and ethical engagement necessary for effective teamwork.

Through these integrated practices, Introduction to Theatre provides meaningful development of key components of the Personal & Social Responsibility essential skill, specifically Intercultural Reasoning and Intercultural Competence and Collaboration Skills, Teamwork, and Value Systems.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://clovis.edu/consumerinfo/assessment.aspx)

<https://clovis.edu/consumerinfo/assessment.aspx>

# Application History

| Type          | username                    | Text                                                                         | Timestamp                         |
|---------------|-----------------------------|------------------------------------------------------------------------------|-----------------------------------|
| Submittal     | robin.kuykendall@clovis.edu | Submitted by robin.kuykendall@clovis.edu                                     | 2026-02-15 12:06 PM (US/Mountain) |
| Authorization | robin.kuykendall@clovis.edu | robin.kuykendall@clovis.edu has authorized the application for submittal     | 2026-02-15 12:06 PM (US/Mountain) |
| Authorization | melissa.reed@clovis.edu     | melissa.reed@clovis.edu has authorized the application for submittal         | 2026-02-13 03:38 PM (US/Mountain) |
| Authorization | deleonnv@clovis.edu         | deleonnv@clovis.edu has authorized the application for submittal             | 2026-02-13 09:43 AM (US/Mountain) |
| Authorization | deleonnv@clovis.edu         | deleonnv@clovis.edu has added melissa.reed@clovis.edu to the application     | 2026-02-10 10:10 AM (US/Mountain) |
| Authorization | deleonnv@clovis.edu         | deleonnv@clovis.edu has added robin.kuykendall@clovis.edu to the application | 2026-02-10 10:10 AM (US/Mountain) |
| Created       | deleonnv@clovis.edu         | Application started by deleonnv@clovis.edu                                   | 2026-02-10 10:10 AM (US/Mountain) |

## **Major Discussion Assignment — Intro to Theatre**

### **Overview**

For this major discussion, you will engage deeply with the assigned theatrical material (play, performance, or recorded production). This discussion is designed to help you think critically, listen actively, and contribute meaningfully to a collaborative conversation about theatre.

Your grade will be based on your preparation, listening, speaking, relevance of comments, and discussion etiquette. Please review the rubric carefully before participating.

---

### **Instructions**

#### **1. Prepare Before the Discussion**

- Watch the assigned play or performance in full.
- Take notes on moments that stood out to you, questions you had, themes you noticed, or connections to class content.
- Bring your notes to the discussion.

#### **2. Participate Actively During the Discussion**

During the discussion, you are expected to:

- Contribute original ideas about the performance.
- Respond thoughtfully to your classmates' comments (adding on, respectfully disagreeing, asking questions, or making connections).
- Listen attentively when others are speaking.
- Stay engaged throughout the conversation.

#### **3. Make Relevant and Thoughtful Connections**

Your comments should:

- Relate directly to the play or performance
- Connect to class concepts, your own experiences, or broader themes in theatre
- Demonstrate that you have thought deeply about the material

#### **4. Demonstrate Professional Discussion Etiquette**

You are expected to:

- Be respectful at all times
- Avoid interrupting
- Support a positive, inclusive discussion environment
- Engage even when you disagree

## Major Discussion Rubric

### Major Discussion Rubric

| Criteria    | Ratings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Pts    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Preparation | <p><b>12 ptsExceeds Expectations</b>Student is exceptionally well prepared. It is clear that they have carefully viewed the material and given thought to what they want to discuss. They came prepared with notes.</p> <p><b>10 ptsMeets Expectations</b>Student is prepared for the discussion and clearly viewed the material and thought about what they wanted to discuss.</p> <p><b>8 ptsApproaches Expectations</b>Student is mostly prepared for the discussion. They viewed the material, but did not prepare further.</p> <p><b>6 ptsStruggles to Meet Expectations</b>Student is somewhat prepared for the discussion. It is evident they watched some of the play, but may not have completed it.</p> <p><b>4 ptsDoes not meet Expectations</b>Student is unprepared for the discussion.</p> | 12 pts |

### Major Discussion Rubric

| Criteria  | Ratings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Pts    |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Listening | <p><b>12 ptsExceeds Expectations</b>Student respectfully and attentively listens to other students. They are engaged when not speaking. They demonstrate this through active listening, note taking, eye contact, etc.</p> <p><b>10 ptsMeets Expectations</b>Student respectfully and attentively listens to others. They remain engaged when not speaking.</p> <p><b>8 ptsApproaches Expectations</b>Student is respectful at all times, and engaged most of the time when others are speaking</p> <p><b>6 ptsStruggles to Meet Expectations</b>Student is respectful, but struggles to maintain engagement when others are speaking.</p> <p><b>4 ptsDoes not meet Expectations</b>Student is disrespectful, disengaged, or otherwise uninvolved in listening to others.</p> | 12 pts |

### Major Discussion Rubric

| Criteria | Ratings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Pts    |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Speaking | <p><b>12 ptsExceeds Expectations</b>Student participates in the discussion through at least 2 original comments and 2 additions, disagreements, or other contributions to another student's contribution.</p> <p><b>10 ptsMeets Expectations</b>Student contributes at least 1 original thought and 2 additions, disagreements, or other contributions to another student's comments.</p> <p><b>8 ptsApproaches Expectations</b>Student contributes at least 2 comments or other contributions that add on to another student's statements.</p> <p><b>6 ptsStruggles to Meet Expectations</b>Student contributes to the discussion once, in any capacity.</p> <p><b>4 ptsDoes not meet Expectations</b>Student does not participate in the discussion</p> | 12 pts |



### Major Discussion Rubric

| Criteria                  | Ratings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Pts    |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Relevance and Connections | <p><b>12 ptsExceeds Expectations</b>Student's comments are always relevant to the discussion and show thoughtfulness. They make connections to class, their lives, the world, etc.</p> <p><b>10 ptsMeets Expectations</b>Student's comments are relevant to the discussion and make some attempt to connect with other's comments and the outside world.</p> <p><b>8 ptsApproaches Expectations</b>Student's comments are relevant to the discussion and immediate topic.</p> <p><b>6 ptsStruggles to Meet Expectations</b>Student struggles to maintain relevance of comments</p> <p><b>4 ptsDoes not meet Expectations</b>Student makes no attempt to make relevant comments.</p> | 12 pts |

### Major Discussion Rubric

| Criteria  | Ratings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Pts    |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Etiquette | <p><b>12 ptsExceeds Expectations</b>Student is respectful, attentive, engaged at all times. They support others in class, even when in disagreement. They do not interrupt or put others down.</p> <p><b>10 ptsMeets Expectations</b>Student is respectful, attentive, and engaged most of the time. They almost never interrupt. They are respectful even when disagreeing.</p> <p><b>8 ptsApproaches Expectations</b>Student is frequently respectful and engaged. They occasionally interrupt. They are respectful even when in disagreement.</p> <p><b>6 ptsStruggles to Meet Expectations</b>Student struggles to maintain engagement or respectfulness. They interrupt frequently or demonstrate rudeness.</p> <p><b>4 ptsDoes not meet Expectations</b>Student is frequently rude or otherwise disrespectful.</p> | 12 pts |

Total Points: 60



# General Education Request Application

|                    |                                                                          |
|--------------------|--------------------------------------------------------------------------|
| Application Number | 5958                                                                     |
| Institution        | CCC                                                                      |
| Applicant(s)       | deleonv@clovis.edu, melissa.reed@clovis.edu, robin.kuykendall@clovis.edu |
| Status             | NMHED_REVIEW                                                             |
| Submitted          | 2026-02-15 12:05 PM (US/Mountain)                                        |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Dr. Robin Kuykendall

### Chief Academic Officer Email

kuykendallr@clovis.edy

### Registrar Name

Kari Smith

### Registrar Email

smithka@clovis.edu

### Course's Academic Department

Communication, Fine Arts, & Humanities

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

THEA

### Number

1220

### Title

Beginning Acting

### Number of credits

3

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

No

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

No

## Co-requisite Course

---

### Prefix

n/a

---

### Number

n/a

---

### Title

n/a

## New Mexico Common Course Information

---

### Prefix

THEA

---

### Number

1220

---

### Title

Beginning Acting

## A. Content Area and Essential Skills

---

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

Creative & Fine Arts

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

#### Student Learning Outcomes

1. Develop fundamental physical, vocal, analytical, and imaginative skills for acting for the stage.
2. Apply fundamental techniques of voice and movement for the stage.
3. Apply principles of play text analysis to understand story, character, and meaning.
4. Gain a better understanding of an actor's approach to goals, tactics, and obstacles.
5. Engage in character creation and development while preparing and performing monologues and scenes.
6. Learn a common vocabulary to help discuss the process of acting.
7. Employ collaborative methods of work with a partner and in groups.
8. Observe and evaluate acting skills of other actors.

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

n/a

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Beginning Acting develops the Communication essential skill by engaging students in performancebased activities that require Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. Through the Open Scene Assignment and its aligned rubric, students learn to communicate meaning, intention, and interpretation through embodied performance and collaborative analysis.

Students build Genre and Medium Awareness, Application and Versatility by exploring how meaning is created differently in live theatrical performance compared to other mediums. In the Open Scene project, students must apply acting techniques—such as objectives, tactics, obstacles, characterization, and physical choices—to transform a neutral script into a specific, meaningful scene. This requires versatility as they adapt performance strategies to fit the genre of realistic acting and the medium of live performance.

The course strengthens Strategies for Understanding and Evaluating Messages as students interpret the open scene text, identify given circumstances, and analyze how character choices communicate emotional and narrative meaning. The rubric's emphasis on memorization, props and costumes, and characterization requires students to evaluate how performance elements shape the audience's understanding of the message they are conveying.

Students also practice Evaluation and Production of Arguments through collaborative rehearsal and performance critique. As partners, they must articulate and defend their interpretive choices—such as character objectives or use of tactics—using evidence from the script and their rehearsal process. The Partner Evaluation component of the rubric reinforces respectful, evidencebased feedback, requiring students to evaluate each other's work and justify their assessments.

Through these integrated practices, Beginning Acting provides sustained development of all components of the Communication essential skill: 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 box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Beginning Acting develops the Critical Thinking essential skill by engaging students in performance and rehearsal processes that require Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. The Open Scene Assignment and its aligned rubric provide a structured environment in which students must analyze, interpret, and justify artistic choices.

Students practice Problem Setting as they begin work on their open scene. Because the script contains neutral dialogue, students must determine the given circumstances, relationship, objectives, and emotional arc of the scene. This requires them to identify the central interpretive problems they must solve in order to create a coherent performance.

The course strengthens Evidence Acquisition by requiring students to gather information from the script, their partner's choices, and their own rehearsal discoveries. Students observe how lines, physical actions, props, costumes, and character choices contribute to meaning. The rubric's categories—such as Objectives, Tactics, Obstacles; Characterization; and Props and Costumes—reinforce the need to collect and use performancebased evidence to support their interpretive decisions.

Students develop Evidence Evaluation as they assess which choices best support the scene's clarity and emotional truth. During rehearsal, they test tactics, refine objectives, and evaluate whether their characterizations are specific and consistent. The Partner Evaluation component requires students to evaluate their partner's work using clear criteria, weighing the effectiveness of choices and the strength of commitment.

Finally, students practice Reasoning/Conclusion by synthesizing their analysis into a fully realized performance. They must justify their interpretive decisions through action, demonstrating logical reasoning in how objectives, tactics, obstacles, and characterization work together. Their final performance reflects conclusions drawn from rehearsal evidence and collaborative problemsolving.

Through these integrated practices, Beginning Acting provides sustained development of all components of the Critical Thinking essential skill: Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

Beginning Acting supports the Personal & Social Responsibility essential skill by developing Intercultural Reasoning and Intercultural Competence and Collaboration Skills, Teamwork, and Value Systems through performancebased, partnerdriven learning. The Open Scene Assignment and its aligned rubric require students to engage with diverse perspectives, work collaboratively, and practice respectful, ethical interaction in a creative environment.

The course fosters Intercultural Reasoning and Intercultural Competence by asking students to create characters and circumstances that may differ from their own lived experiences. Because open scenes use neutral dialogue, students must imagine and construct cultural, social, and emotional contexts for their characters. This process encourages them to consider how identity, background, and worldview shape human behavior and communication. Through rehearsal and performance, students explore how cultural nuance influences objectives, tactics, and characterization, building sensitivity to perspectives beyond their own.

The course also develops Collaboration Skills, Teamwork, and Value Systems through the partnerbased structure of the Open Scene Assignment. Students must negotiate interpretive choices, share responsibility for rehearsal, and support one another in performance. The rubric emphasizes Partner Evaluation, requiring students to assess their partner's contributions respectfully and thoughtfully. This reinforces the importance

of mutual accountability, constructive feedback, and maintaining a positive, inclusive working environment. Students learn to navigate differing viewpoints, compromise when necessary, and uphold shared values such as respect, commitment, and professionalism.

Through these integrated practices, Beginning Acting provides meaningful development of key components of the Personal & Social Responsibility essential skill, specifically Intercultural Reasoning and Intercultural Competence and Collaboration Skills, Teamwork, and Value Systems.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://clovis.edu/consumerinfo/assessment.aspx)

<https://clovis.edu/consumerinfo/assessment.aspx>



# Application History

| Type          | username                    | Text                                                                        | Timestamp                         |
|---------------|-----------------------------|-----------------------------------------------------------------------------|-----------------------------------|
| Submittal     | robin.kuykendall@clovis.edu | Submitted by robin.kuykendall@clovis.edu                                    | 2026-02-15 12:05 PM (US/Mountain) |
| Authorization | robin.kuykendall@clovis.edu | robin.kuykendall@clovis.edu has authorized the application for submittal    | 2026-02-15 12:05 PM (US/Mountain) |
| Authorization | melissa.reed@clovis.edu     | melissa.reed@clovis.edu has authorized the application for submittal        | 2026-02-13 03:37 PM (US/Mountain) |
| Authorization | deleonn@clovis.edu          | deleonn@clovis.edu has authorized the application for submittal             | 2026-02-13 09:53 AM (US/Mountain) |
| Authorization | deleonn@clovis.edu          | deleonn@clovis.edu has added robin.kuykendall@clovis.edu to the application | 2026-02-13 09:44 AM (US/Mountain) |
| Authorization | deleonn@clovis.edu          | deleonn@clovis.edu has added melissa.reed@clovis.edu to the application     | 2026-02-13 09:44 AM (US/Mountain) |
| Created       | deleonn@clovis.edu          | Application started by deleonn@clovis.edu                                   | 2026-02-13 09:43 AM (US/Mountain) |

## Open Scene Performance Assignment — Beginning Acting

### Overview

For this assignment, you and a partner will rehearse and perform an “open scene” using a script composed of neutral dialogue. Your task is to create a fully realized performance by developing characters, objectives, tactics, obstacles, and staging choices that bring meaning and specificity to the scene. Your performance will be evaluated using the *Open Scene Rubric* provided.

---

### Instructions

#### 1. Select and Rehearse Your Open Scene

- Choose the assigned open scene script provided by your instructor.
- Work collaboratively with your partner to determine the given circumstances, relationship, setting, and emotional arc of the scene.
- Rehearse regularly to develop clear character choices, blocking, and physical actions.

#### 2. Memorize the Scene

- You must be fully memorized for performance.
- Lines, movements, and actions should be secure, confident, and consistent.

#### 3. Develop Character and Performance Choices

Your performance should demonstrate:

- **Clear objectives, tactics, and obstacles**
- **Strong characterization** that remains consistent throughout
- **Thoughtful use of props and costumes** that support the world of the scene

#### 4. Prepare Props and Costumes

- Bring all props and costume pieces needed to support your interpretation.
- These items should enhance the setting, clarify relationships, and reinforce the given circumstances.

#### 5. Perform Your Scene

- Perform your open scene for the class on the assigned date.
- Stay fully committed, in character, and engaged throughout the performance.

## Open Scene Rubric

### Open Scene Rubric

| Criteria           | Ratings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Pts   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Partner Evaluation | <b>5 pts</b> Meets/Exceeds Expectations<br><b>4 pts</b> Meets Expectations<br><b>3 pts</b> Approaches Expectations<br><b>2 pts</b> Struggles to Meet Expectations<br><b>1 pts</b> Does not meet Expectations<br><b>0 pts</b> No Marks                                                                                                                                                                                                                                                                                                                                                                               | 5 pts |
| Memorization       | <b>5 pts</b> Meets/Exceeds ExpectationsStudent is fully memorized and comfortable with the lines, and movements. There are no errors.<br><b>4 pts</b> Meets ExpectationsStudent is clearly memorized but may have one or two small errors.<br><b>3 pts</b> Approaches ExpectationsStudent is somewhat memorized, but paraphrases or is otherwise imprecise.<br><b>2 pts</b> Struggles to Meet ExpectationsStudent is mostly not memorized or has significant problems.<br><b>1 pts</b> Does not meet ExpectationsStudent has to refer to the script or other notes<br><b>0 pts</b> No MarksStudent makes no attempt | 5 pts |

## Open Scene Rubric

| Criteria           | Ratings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Pts   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Props and Costumes | <p><b>5 ptsMeets/Exceeds Expectations</b>Student brings all needed pieces. The costumes and props help to set the scene, support the given circumstances, and are used well.</p> <p><b>4 ptsMeets Expectations</b>The student uses costumes and props to support the scene, but they either do not totally fit the scenario, or they are underutilized.</p> <p><b>3 ptsApproaches Expectations</b>Some effort is made to use costume and props to support the scene.</p> <p><b>2 ptsStruggles to Meet Expectations</b>Very little effort is made to support the scene using props and costumes.</p> <p><b>1 ptsDoes not meet Expectations</b>Little to no effort is made to use props or costumes.</p> <p><b>0 ptsNo Marks</b>Student does not use props or costumes.</p> | 5 pts |

## Open Scene Rubric

| Criteria                       | Ratings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Pts   |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Objectives, Tactics, Obstacles | <p><b>5 ptsMeets/Exceeds Expectations</b>The student demonstrates clear and strong objectives, multiple tactics, and commits to the scene fully.</p> <p><b>4 ptsMeets Expectations</b>The student has a clear objective and uses a few tactics. They are mostly committed to the scene.</p> <p><b>3 ptsApproaches Expectations</b>Student has an objective and uses at least two tactics. The scene is not fully committed or clear.</p> <p><b>2 ptsStruggles to Meet Expectations</b>Student has evidence of an objective, but it lacks strength or specificity. Only one tactic is used.</p> <p><b>1 ptsDoes not meet Expectations</b>Student objective is unclear as are tactics.</p> <p><b>0 ptsNo Marks</b>Student makes no attempt to use an objective or tactics.</p> | 5 pts |

## Open Scene Rubric

| Criteria         | Ratings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Pts   |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Characterization | <p><b>5 ptsMeets/Exceeds Expectations</b>Student presents a distinct, engaging, fully developed character. They stay in character at all times.</p> <p><b>4 ptsMeets Expectations</b>Student stays in character at all times and presents a mostly developed character.</p> <p><b>3 ptsApproaches Expectations</b>Student presents a character. They may struggle to stay in character, or have an underdeveloped characterization.</p> <p><b>2 ptsStruggles to Meet Expectations</b>Student struggles to create a distinct character and to stay in character.</p> <p><b>1 ptsDoes not meet Expectations</b>Little to no effort is made to create a character.</p> <p><b>0 ptsNo Marks</b>Student does not make any attempt at character</p> | 5 pts |

Total Points: 25



# General Education Request Application

|                    |                                                                          |
|--------------------|--------------------------------------------------------------------------|
| Application Number | 5959                                                                     |
| Institution        | CCC                                                                      |
| Applicant(s)       | deleonv@clovis.edu, melissa.reed@clovis.edu, robin.kuykendall@clovis.edu |
| Status             | NMHED_REVIEW                                                             |
| Submitted          | 2026-02-15 12:05 PM (US/Mountain)                                        |



# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Dr. Robin Kuykendall

### Chief Academic Officer Email

kuykendallr@clovis.edy

### Registrar Name

Kari Smith

### Registrar Email

smithka@clovis.edu

### Course's Academic Department

Communication, Fine Arts, & Humanities

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

THEA

### Number

1130

### Title

Introduction to Film

### Number of credits

3

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

Yes

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

No

## Co-requisite Course

---

### Prefix

n/a

---

### Number

n/a

---

### Title

n/a

## New Mexico Common Course Information

---

### Prefix

THEA

---

### Number

1130

---

### Title

Introduction to Film

## A. Content Area and Essential Skills

---

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

Creative & Fine Arts

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

Student Learning Outcomes

1. Define and describe basic film terms, forms, methods, and concepts.
2. Identify and analyze the significance of film historically, culturally, and worldly.
3. Analyze and evaluate the aesthetic, structural, and thematic aspects of film.
4. Analyze and critique films.

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

n/a

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Introduction to Film develops the Communication essential skill by engaging students in analytical and written work that requires Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. The Final Essay Assignment and its aligned rubric provide a structured framework for students to interpret films, articulate insights, and communicate their ideas clearly and effectively.

Students build Genre and Medium Awareness, Application and Versatility by studying films across a range of genres and cinematic styles. In the Final Essay, they must analyze filmmaking elements—such as cinematography, editing, sound, and design—and apply appropriate film vocabulary to explain how meaning is constructed within the medium of film. This requires versatility as students adapt their analytical approach to different genres, narrative structures, and visual styles.

The course strengthens Strategies for Understanding and Evaluating Messages by teaching students to interpret films as complex communicative texts. The assignment requires analysis of theme, script structure, character development, and design elements. Students must evaluate how these components work together to convey messages, shape audience interpretation, and express artistic intent. The rubric reinforces this skill by assessing the depth, accuracy, and relevance of their analysis.

Students also practice Evaluation and Production of Arguments through the development of a thesis-driven essay. They must construct a clear argument about the film, support it with evidence from specific scenes and filmmaking techniques, and integrate relevant vocabulary and concepts from class. The Writing and Filmmaking Analysis categories of the rubric ensure that students present logical, well-supported arguments and communicate them with clarity, organization, and precision.

Through these integrated practices, Introduction to Film provides sustained development of all components of the Communication essential skill: 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 box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Introduction to Film develops the Critical Thinking essential skill by engaging students in analytical work that requires Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion. The Final Essay Assignment and its aligned rubric guide students through a structured process of interpreting films, gathering evidence, and constructing wellsupported arguments.

Students practice Problem Setting by selecting a film from the course and determining the central analytical focus of their essay. They must create a thesis statement that identifies the key interpretive problem they intend to explore—such as theme, character development, narrative structure, or filmmaking techniques. This step requires students to define the scope of their analysis and articulate the specific questions their essay will address.

The course strengthens Evidence Acquisition by requiring students to gather detailed observations from the film itself. The assignment directs them to analyze theme, script structure, characters, design elements, and filmmaking techniques such as cinematography. The rubric reinforces this expectation by assessing the accuracy and depth of their use of film vocabulary, examples, and concepts.

Students develop Evidence Evaluation as they determine which scenes, techniques, and design choices best support their thesis. They must assess the relevance and significance of their examples, evaluate how different filmmaking elements contribute to meaning, and decide which evidence most effectively strengthens their argument. The rubric's categories for Filmmaking Analysis, Script Analysis, Theme Analysis, and Design Analysis ensure that students evaluate evidence across multiple dimensions of the film.

Finally, students practice Reasoning/Conclusion by synthesizing their analysis into a coherent, thesisdriven essay. They must draw logical conclusions based on the evidence they have gathered and evaluated, demonstrating clear reasoning and strong organization. The Writing category of the rubric reinforces the need for clarity, flow, and wellsupported conclusions.

Through these integrated practices, Introduction to Film provides sustained development of all components of the Critical Thinking essential skill: Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

Introduction to Film supports the Personal & Social Responsibility essential skill by developing Intercultural Reasoning and Intercultural Competence and Ethical Reasoning through the study and analysis of films from diverse cultural, historical, and social contexts. The Final Essay Assignment and its aligned rubric require students to engage deeply with cinematic works that reflect a wide range of identities, worldviews, and ethical questions.

The course fosters Intercultural Reasoning and Intercultural Competence by exposing students to films that represent varied cultural backgrounds, global perspectives, and lived experiences. As students analyze theme, character, design, and filmmaking techniques, they must consider how cultural context shapes narrative meaning and audience interpretation. The assignment requires them to use specific examples and vocabulary to articulate how films communicate ideas related to identity, community, and human experience. This process encourages students to recognize cultural nuance, evaluate differing perspectives, and develop sensitivity to stories and viewpoints that may differ from their own.

The course also develops Ethical Reasoning by asking students to examine the moral questions, dilemmas, and value systems embedded within films. Through analysis of plot, character motivations, and thematic content, students evaluate how filmmakers present ethical conflicts and how cinematic choices influence the viewer's understanding of right, wrong, justice, and responsibility. The rubric's emphasis on thoughtful, detailed analysis ensures that students move beyond surfacelevel reactions to engage with the ethical dimensions of storytelling, representation, and artistic intent.

Through these integrated practices, Introduction to Film provides meaningful development of key

components of the Personal & Social Responsibility essential skill, specifically Intercultural Reasoning and Intercultural Competence and Ethical Reasoning.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://clovis.edu/consumerinfo/assessment.aspx)

<https://clovis.edu/consumerinfo/assessment.aspx>

# Application History

| Type          | username                    | Text                                                                        | Timestamp                         |
|---------------|-----------------------------|-----------------------------------------------------------------------------|-----------------------------------|
| Submittal     | robin.kuykendall@clovis.edu | Submitted by robin.kuykendall@clovis.edu                                    | 2026-02-15 12:05 PM (US/Mountain) |
| Authorization | robin.kuykendall@clovis.edu | robin.kuykendall@clovis.edu has authorized the application for submittal    | 2026-02-15 12:05 PM (US/Mountain) |
| Authorization | melissa.reed@clovis.edu     | melissa.reed@clovis.edu has authorized the application for submittal        | 2026-02-13 03:36 PM (US/Mountain) |
| Authorization | deleonn@clovis.edu          | deleonn@clovis.edu has authorized the application for submittal             | 2026-02-13 01:35 PM (US/Mountain) |
| Authorization | deleonn@clovis.edu          | deleonn@clovis.edu has added robin.kuykendall@clovis.edu to the application | 2026-02-13 09:54 AM (US/Mountain) |
| Authorization | deleonn@clovis.edu          | deleonn@clovis.edu has added melissa.reed@clovis.edu to the application     | 2026-02-13 09:54 AM (US/Mountain) |
| Created       | deleonn@clovis.edu          | Application started by deleonn@clovis.edu                                   | 2026-02-13 09:54 AM (US/Mountain) |

## Intro to Film – Final Essay

In this essay, you will choose one of the films viewed this semester. You will then create a thesis statement and use this as the basis for your essay. The essay should be 3-5 pages, 12-point Times New Roman, double-spaced. You must include a heading at the top left corner of the paper that states your name, instructor name, class, and date. You will then create a title for your essay that is centered.

The essay itself should include a thorough, insightful, thoughtful discussion of the following areas related to the chose film: theme, script structure, characters, design elements, filmmaking (this includes cinematography), and your overall thoughts about the piece. Be sure to include relevant vocabulary words, techniques and concepts from class, as well as examples from the film. Be specific and descriptive. I do NOT need a detailed recap of the film as you can assume I am familiar with the pieces.

Please be sure to thoroughly proofread your essay before submitting. I also highly suggest having a classmate peer edit your paper. This can be a valuable tool.

| Criteria            | 10-9                                                                                                                                                        | 8-7                                                                                                                       | 6-5                                                                                                                             | 4-3                                                                                    | 2-0                                                                                                    |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Writing             | The paper is exceptionally well written and contains no errors. In addition, the paper has a strong voice, good flow, organization, and strong word choice. | The paper is well written with very few errors                                                                            | The paper has some significant errors and lacks much attempt at voice, flow, and/or organization.                               | The paper contains many significant errors that impair readability.                    | The paper is poorly written with a multitude of significant errors.                                    |
| Filmmaking Analysis | The essay contains detailed, thoughtful analysis of key filmmaking concepts and makes use of important vocabulary terms.                                    | The essay contains correct use of key vocabulary terms and demonstrates a good understanding of key filmmaking principles | The essay contains at least three vocabulary terms used correctly and shows a basic understanding of some filmmaking principles | The paper contains at least one correctly used filmmaking vocabulary word and concept. | The paper makes little to no attempt to discuss filmmaking principles and/or makes significant errors. |
| Script Analysis     | The essay contains detailed, thoughtful analysis of the script. This includes a discussion of the plot, characters, and story structure.                    | The essay contains a basic analysis of the script including plot, characters, and story structure.                        | The essay contains a basic discussion of at least two of the following elements: plot, story structure, character.              | The essay contains a brief discussion of the script but lacks any depth or relevance.  | The essay makes little to no attempt to discuss the script.                                            |



|                 |                                                                                                                                                                                |                                                                                                           |                                                                                                          |                                                                                                                                |                                                                       |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Theme Analysis  | The essay thoroughly analyzes the theme of the film. There are many relevant, detailed and specific examples provided.                                                         | The essay makes a satisfactory analysis of the theme of the film using some good examples.                | The essay contains a basic analysis of the theme but lacks detail and specificity.                       | The essay contains a surface-level analysis of the theme and/or misses the message of the film.                                | The essay makes little to no attempt to discuss the theme of the film |
| Design Analysis | The essay thoroughly discusses the design elements of the film such as costuming, sound, and set direction. The examples are specific and linked to other areas of discussion. | The essay discusses design elements and makes some attempt to link these thoughts to other analysis areas | The essay discuss some elements of design, but does not effectively link them to other areas of analysis | The essay contains a surface-level analysis of some design elements and does not make any relevant connections to other areas. | The essay contains little to no attempt to discuss design areas.      |



# General Education Request Application

|                    |                                                                          |
|--------------------|--------------------------------------------------------------------------|
| Application Number | 5964                                                                     |
| Institution        | CCC                                                                      |
| Applicant(s)       | robin.kuykendall@clovis.edu, brownje@clovis.edu, melissa.reed@clovis.edu |
| Status             | NMHED_REVIEW                                                             |
| Submitted          | 2026-02-16 01:14 PM (US/Mountain)                                        |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Robin Kuykendall

---

### Chief Academic Officer Email

robin.kuykendall@clovis.edu

---

### Registrar Name

Kari Smith

---

### Registrar Email

smithka@clovis.edu

---

### Course's Academic Department

STEM

---

### Is this a Application a Re-Submission

yes

---

### Describe the Clarifications to the Original Application

This course was submitted to the committee and approved in April 2021. It was submitted with an error though. The application listed the course as BIOL 2210C instead of BIOL 2110C. The course description, SLOs, syllabus and assessment were for BIOL 2110C, so it was only a typo in the course number on the application. No one caught the error and the course was approved. I am resubmitting to get it approved under the correct number. Thank you!

## Institutional Course Information

---

### Prefix

BIOL

---

### Number

2110C

---

### Title

Principles of Biology: Cellular and Molecular Lecture & Lab

---

### Number of credits

4

---

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

Yes

---

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

No

## Co-requisite Course

---

### Prefix

n/a

---

### Number

n/a

---

### Title

n/a

## New Mexico Common Course Information

---

### Prefix

BIOL

---

### Number

2110C

---

### Title

Principles of Biology: Cellular and Molecular Lecture & Lab

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

---

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

#### Lecture Student Learning Outcomes

1. Apply the scientific method to develop and evaluate hypotheses and propose an experiment to test a scientific hypothesis related to cell biology and molecular biology.
2. Describe the distinguishing characteristics of various biological molecules (water, carbohydrates, lipids, proteins, and nucleic acids). (HED Area 3, Competency 3) 213
3. Compare and contrast the basic features of cells and how prokaryotic cells differ from eukaryotic cells. (HED Area 3, Competency 3)
4. Understand how organisms maintain homeostasis in a dynamic environment.
5. Describe how biological molecules are acquired and how they are subsequently used to meet the metabolic needs of organisms. (HED Area 3, Competency 3)
6. Describe membrane structure and function.
7. Describe and analyze the nature of bioenergetic transformations and metabolism within the cell.
8. Describe the processes of cellular respiration and photosynthesis.
9. Analyze with specific detail the processes of DNA replication, transcription, and translation.
10. Analyze with specific detail the types, mechanisms, and regulation of cellular division.
11. Assess important applications of cell and molecular biology to energy use, medicine, and other day-to-day processes. (HED Area 3, Competency 1,3,4,5)

#### Lab Student Learning Outcomes

1. Describe and apply the scientific method to solve problems in biological context.
  2. Demonstrate knowledge of laboratory safety skills and procedures.
  3. Practice principles of scientific method while conducting laboratory activities and experiments.
  4. Perform laboratory activities using relevant laboratory equipment, chemical reagents, and supplies to observe biological specimens, to measure variables, and to design and conduct experiments.
  5. Operate light microscopes, prepare wet mount slides, and use stains.
  6. Exhibit ability to use pipettes and other volumetric measuring devices, chemical glassware, balances, pH meters or test papers, spectrophotometers, and separation techniques, such as chromatography and/or electrophoresis to perform activities relevant to other course competencies.
  7. Analyze and report data generated during laboratory activities and experiments.
- 

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

N/A

## Section 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.

### **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning/Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

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

In this Cellular and Molecular Biology course, students engage in scientific inquiry through structured application of the scientific method.

Problem Setting:

Students identify biological questions related to cellular structure, metabolism, genetics, and molecular processes. Through lecture and laboratory activities, students formulate testable hypotheses and define measurable variables in experimental contexts.

Evidence Acquisition:

Students collect quantitative and qualitative data through laboratory experimentation, including microscopy, spectrophotometry, pH measurement, chromatography, electrophoresis, and other core biological techniques. Students also gather relevant scientific information from course materials to inform experimental design and analysis.

Evidence Evaluation:

Students organize data into appropriate formats such as tables, charts, and graphs. They analyze patterns, trends, and relationships within experimental results and assess the reliability and validity of their findings. Students evaluate potential sources of experimental error and determine whether results support or refute the original hypothesis.

Reasoning and Conclusion:

Students construct evidence-based conclusions that logically connect experimental data to biological principles. Through laboratory reports, exams, quizzes, and in-class activities, students demonstrate the ability to interpret results, justify conclusions, and apply biological reasoning to novel scenarios involving cellular and molecular systems.

Assessment of Critical Thinking occurs primarily through laboratory activities and reports, unit exams, quizzes, and class discussions.

### **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

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

Components: Communication/Representation; Analysis of Quantitative Arguments; Application of Quantitative Models

Quantitative reasoning is developed through analysis of biological data and application of mathematical concepts to cellular and molecular processes.

Communication and Representation of Quantitative Information:

Students collect and represent experimental data using tables, graphs, charts, and mathematical expressions. Laboratory activities require measurement of biological variables such as growth rates, reaction rates, pH changes, concentration gradients, and inheritance patterns.

Analysis of Quantitative Arguments:

Students interpret quantitative data to identify patterns such as linear versus exponential growth, metabolic rate changes, and Mendelian inheritance ratios. Students analyze whether data support biological claims and

evaluate conclusions presented in exam scenarios and laboratory exercises.

Application of Quantitative Models:

Students apply mathematical and conceptual models to predict biological outcomes. Examples include exponential growth models, probability calculations in genetics, and models of energy transformation during cellular respiration and photosynthesis. Students use quantitative reasoning to support conclusions about cellular processes and organismal function.

Quantitative Reasoning is assessed through laboratory reports, data analysis assignments, quizzes, unit exams, and in-class activities requiring calculation and interpretation of biological data.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

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

This course connects cellular and molecular biology concepts to broader human, environmental, and societal contexts.

Intercultural Reasoning and Global Awareness:

Students examine how biological principles apply to human health, disease, and environmental conditions that affect diverse populations. Topics such as genetic inheritance, cellular disease, and environmental effects on biological systems promote understanding of biology within global and societal contexts.

Sustainability and the Natural and Human Worlds:

Through study of photosynthesis, cellular respiration, energy transformation, and environmental effects on inheritance, students analyze the relationship between biological systems and environmental sustainability. Students explore how biological processes inform responsible energy use and environmental stewardship.

Ethical Reasoning:

Students consider ethical issues associated with genetics, biotechnology, cellular research, and medical applications. Through classroom discussion and assessment activities, students evaluate the implications of scientific advancements and apply principles of academic integrity and responsible scientific conduct.

Collaboration and Teamwork:

Laboratory activities require students to work collaboratively in collecting data, conducting experiments, and interpreting results. Students practice shared responsibility, respectful communication, and cooperative problem-solving in laboratory settings.

Civic Knowledge and Engagement:

Through examination of real-world applications of cell and molecular biology in medicine, biotechnology, and energy use, students develop scientific literacy that informs civic understanding and responsible decision-making.

Assessment of Personal and Social Responsibility occurs through laboratory collaboration, exams addressing applied biological issues, quizzes, and discussion activities.

## Section D. Assessment Plan

---

**[Link to Institution's General Education Assessment Plan](https://www.clovis.edu/consumerinfo/assessment.aspx)**

<https://www.clovis.edu/consumerinfo/assessment.aspx>

# Application History

| Type          | username                    | Text                                                                             | Timestamp                         |
|---------------|-----------------------------|----------------------------------------------------------------------------------|-----------------------------------|
| Submittal     | robin.kuykendall@clovis.edu | Submitted by robin.kuykendall@clovis.edu                                         | 2026-02-16 01:14 PM (US/Mountain) |
| Authorization | robin.kuykendall@clovis.edu | robin.kuykendall@clovis.edu has authorized the application for submittal         | 2026-02-16 01:14 PM (US/Mountain) |
| Authorization | brownje@clovis.edu          | brownje@clovis.edu has authorized the application for submittal                  | 2026-02-16 09:34 AM (US/Mountain) |
| Authorization | melissa.reed@clovis.edu     | melissa.reed@clovis.edu has authorized the application for submittal             | 2026-02-16 09:12 AM (US/Mountain) |
| Authorization | robin.kuykendall@clovis.edu | robin.kuykendall@clovis.edu has added melissa.reed@clovis.edu to the application | 2026-02-16 09:03 AM (US/Mountain) |
| Authorization | robin.kuykendall@clovis.edu | robin.kuykendall@clovis.edu has added brownje@clovis.edu to the application      | 2026-02-16 09:01 AM (US/Mountain) |
| Created       | robin.kuykendall@clovis.edu | Application started by robin.kuykendall@clovis.edu                               | 2026-02-16 08:46 AM (US/Mountain) |



# Principals of Biology: Cellular and Molecular Biology

BIOL 2110C 301

Monday and Wednesday: 9:00am – 11:30am

Fall 2025

**INSTRUCTOR NAME:**

**OFFICE:**

**OFFICE PHONE:**

**OFFICE HOURS:** Monday thru Thursday: 2:30pm – 4:00pm

**E-MAIL:** Use the Canvas system to send any mail messages

**REQUIRED TEXT:** Biology  
Mary Ann Clark, Jung Choi, Matthew Douglass  
2<sup>nd</sup> edition  
ISBN: 978-1-947172-51-7  
OpenStax: <https://openstax.org/details/books/biology-2e/>

## TEXTBOOKS:

CCC partners with BibliU to provide you with the most economical textbook options by offering the Textbook Affordability Package (TAP). All textbook fees are assessed at the time of registration so all you have to do is stop by the bookstore to pick up your books, or you can call to arrange for delivery. If you wish to opt out of TAP, you must opt out each semester before the deadlines and you will be responsible for acquiring any required textbooks. Check your CCC e-mail and/or [www.clovis.edu/bookstore](http://www.clovis.edu/bookstore) for more information on what classes are part of TAP, textbook fees, and important opt out information and deadlines. Please note that some textbooks are **fully** digital and are accessible within the Canvas class (look for “BibliU (Textbooks)” in the left-hand course menu).

## COMMUNICATION:

Messages through the Canvas system is the preferred method of communication – please do not use my work email. Every effort will be made to respond to your message within 24 hours of delivery Monday thru Thursday – I may check the Canvas system less frequently Friday thru Sunday. **All assignments must be submitted through the Assignment link on Canvas, but you can send them to me through the Inbox if you are having trouble uploading - I have to have them before the deadline to receive credit.**

## COURSE DESCRIPTION:

This course is a combined lecture and lab that introduces students to major topics in general biology. This course focuses on the principles of structure and function of living things at the molecular, cellular and organismic levels of organization. Major topics included are introduction to the scientific process, chemistry of cells, organization of cells, cellular respiration, photosynthesis, cell division, DNA replication, transcription, and translation.

### **STUDENT LEARNING OUTCOMES - Lecture:**

1. Apply the scientific method to develop and evaluate hypotheses and propose an experiment to test a scientific hypothesis related to cell biology and molecular biology.
2. Describe the distinguishing characteristics of various biological molecules (water, carbohydrates, lipids, proteins, and nucleic acids). (HED Area 3, Competency 3)
3. Compare and contrast the basic features of cells and how prokaryotic cells differ from eukaryotic cells. (HED Area 3, Competency 3)
4. Understand how organisms maintain homeostasis in a dynamic environment.
5. Describe how biological molecules are acquired and how they are subsequently used to meet the metabolic needs of organisms. (HED Area 3, Competency 3)
6. Describe membrane structure and function.
7. Describe and analyze the nature of bioenergetic transformations and metabolism within the cell.
8. Describe the processes of cellular respiration and photosynthesis.
9. Analyze with specific detail the processes of DNA replication, transcription, and translation.
10. Analyze with specific detail the types, mechanisms, and regulation of cellular division.
11. Assess important applications of cell and molecular biology to energy use, medicine, and other day-to-day processes.

### **STUDENT LEARNING OUTCOMES – Lab:**

1. Describe and apply the scientific method to solve problems in biological context
2. Demonstrate knowledge of laboratory safety skills and procedures.
3. Practice principles of the scientific method while conducting laboratory activities and experiments.
4. Perform laboratory activities using relevant laboratory equipment, chemical reagents, and supplies to observe biological specimens, to measure variables, and to design and conduct experiments.
5. Operate light microscopes, prepare wet mount slides, and use stains.
6. Exhibit ability to use pipettes and other volumetric measuring devices, chemical glassware, balances, pH meters or test papers, spectrophotometers, and separation techniques, such as chromatography and/or electrophoresis to perform activities relevant to other course competencies.
7. Analyze and report data generated during laboratory activities and experiments.

### **ATTENDANCE REQUIREMENTS:**

Attendance is required at all sessions in each course. When circumstances make attendance impossible, you should notify the instructor of your absence. You are responsible for making sure you are caught up with the class lectures and assignments, so you're able to attend the next class session prepared.

### **GRADING POLICY:**

A Student's final grade is based on overall performance in class. Grades in this course will be based on the following:

- |                           |     |
|---------------------------|-----|
| • In Class/Lab Activities | 20% |
| • Chapter Quizzes         | 30% |
| • Unit Exams              | 50% |

#### Grading Scale:

|           |     |
|-----------|-----|
| 90 – 100% | = A |
| 80 – 89%  | = B |
| 70 – 79%  | = C |
| 60 – 69%  | = D |
| Below 60% | = F |

Lab assignments and quizzes will be assigned most class periods and are given for practice and reinforcement. Failure to complete all lab assignments and quizzes could have a major impact on the student's overall success in the class.

There will be no make-up quizzes or lab/activities assignments allowed. Since unforeseeable circumstances do arise, each student will be allowed to drop their lowest quiz and activities/lab assignment. This will allow each student to miss a quiz and a lab assignment without being penalized. No make-up quizzes will be given, and exams and quizzes must be taken on the day and time announced.

Your lowest exam unit exam grade will **not** be dropped – you must complete all four exams regardless of your course grade. If you miss an exam, that exam will be recorded as zero and averaged into your course grade.

On any assignment, if you feel there is an error on a question, let me know immediately so that I can review it. You have one week after an assignment is graded and returned to review and contest any question on the assignment. After one week, the grade on the assignment will stand and no question will be contested.

#### **LATE WORK:**

No late assignments will be accepted, and all assignments must be completed by the deadline. Therefore, planning is essential, and procrastination is to be avoided —so don't use your dropped assignments the first week because you are having a hard time getting going and then not have them for an emergency.

#### **WITHDRAW:**

If you are unable to attend the required sessions or complete the assignments and quizzes/tests successfully for a course, you should withdraw from the class after you have spoken with your instructor and academic advisor. **Instructors do not withdraw students.** Dual credit students must contact their high school counselor.

#### **TECHNOLOGY REQUIREMENTS:**

Canvas is designed for maximum compatibility and minimal requirements. It is recommended to use a computer that is 5 years old or newer. Please [click here](#) or use this link

<https://guides.instructure.com/m/67952> to see basic computer specifications for Canvas.

#### **COMPUTERS ON CAMPUS:**

Computers for student use are available on campus in the **Center for Student Success** (Room 171) or the **Library**. Staff will not instruct and/or tutor students regarding assignments. When in doubt, **CONTACT YOUR INSTRUCTOR**. Students needing tutoring assistance should go to the **Tutoring and Writing centers** (Room 415A).

**BASIC NEEDS STATEMENT:**

It can be difficult to fully participate and maintain focus on your classes when you face challenges with basic needs such as adequate living space, access to food, reliable transportation, childcare, and other necessities. These challenges may impact your personal and academic success. Talk to your instructor or contact the **Department of Holistic Support** at **575-769-4184** for assistance in finding the resources you need.

**STARFISH:**

Clovis Community College uses **Starfish Early Alert** as a communication tool between students, faculty and campus support services. Throughout the term, you may receive emails in your CCC email account from Starfish regarding your course grades or academic performance. These emails are intended to help you be successful in your CCC courses. Please open the emails and follow the recommendations. Additionally, to make sure you are receiving the support you need, your instructor or your advisor may ask to meet with you to discuss your course progress or refer you to a campus service.

To access Starfish, log into Canvas and click the Starfish link. To learn more about Starfish, visit “Starfish for Students” at <http://www.clovis.edu/students/starfish.aspx>. If you need assistance with Starfish, email the help desk at [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu).

**QUALIFIED STUDENTS WITH DISABILITIES:**

Qualified students who have a disability that may require some special arrangements in order to meet course requirements should contact the Office of Accessibility and Resources (OARS) at 575-769-4099 in the Dr. H. A. Miller Student Services Center as soon as possible to ensure that their needs are appropriately met. In an effort to ensure students have the support necessary to be successful, Clovis Community College has an Early Alert Referral Program through Starfish. Instructors may make a referral for students that could benefit from additional support outside the classroom. Students may also request a referral.

**COPYRIGHT:**

It is the policy of Clovis Community College to respect the right of those who create and publish intellectual property in the form of printed matter, film, video, audio recordings, computer software and the like. The items posted on the website for this course are copyright by the Publisher and by CCC. No student has the right to use the material for any means other than originally intended. CCC respects copyright laws and insists that its faculty, staff and students do likewise. Students should not distribute email document attachments or post information on any CCC site containing copyrighted material unless the right to do so has been granted by the copyright holder.

**EMERGENCY ALERT:**

In case of campus closure, a recording will be placed on the switchboard (**575-769-2811**) and the CCC website ([www.clovis.edu](http://www.clovis.edu)) to announce the cancellation of classes or closure of the college. You may sign up for text and email alerts at [www.clovis.edu/getrave](http://www.clovis.edu/getrave).

**ACADEMIC DISHONESTY:**

Academic dishonesty includes plagiarism and other forms of cheating behavior as described in the college catalog. Academic dishonesty is unacceptable at Clovis Community College and in this course. Students committing acts of academic dishonesty shall be penalized by the assignment of lowered or failing grades on assignments and/or for the entire course, depending upon the instructor's evaluation of the severity of the dishonest act. Consult the **college catalog** for more information on the institutional policy on academic integrity.

#### **TECHNICAL SUPPORT:**

CCC Help Desk (Room 119) support is available by emailing [helpdesk@clovis.edu](mailto:helpdesk@clovis.edu) or by calling 575-769-4969. Be sure to visit the [Canvas Student Orientation](#) site if you need help navigating our online classroom. You may also find answers to common questions / problems on [Canvas FAQs](#). To see the Help Desk hours of operation, please visit <http://www.clovis.edu/helpdesk/>.

### **Tentative Outline of Topics Covered:**

#### **Unit 1: Scientific Method and Chemistry**

Introduction to Biology and Scientific Method  
Chemistry I – Chemistry of Life  
Chemistry II – Important Biological Molecules

#### **Unit 2: Cells and Cell Metabolism**

Cell Structure and Function  
Plasma Membrane Structure and Function  
Cellular Metabolism

#### **Unit 3: Metabolism and DNA**

Photosynthesis and Cellular Respiration  
DNA Structure and Replication  
DNA Transcription and Translation

#### **Unit 4: Protein Synthesis and Genetics**

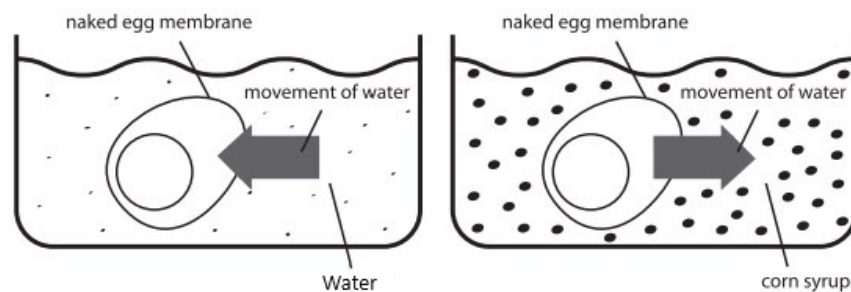
Cell Division  
Meiosis and Mendel's Genetics  
Non-Mendelian Genetics and Environmental Effects on Inheritance

## Biology I

### Osmosis – Naked Egg Lab

#### Overview:

The purpose of this lab is to visually demonstrate osmosis, showing how a selectively permeable membrane allows water to move from areas of high-water concentration to low-water concentration. You will be using a naked egg (an egg without a shell) to act as a selectively permeable membrane, which will allow smaller water molecules (the solvent) to move through the membrane while excluding larger molecules (the solute) such as sugar and protein.



This lab will be broken up into three sections or modules:

- 1) During this first section (module), you will collect your own materials and perform the naked egg experiment to demonstrate the process of osmosis. The material needed and methods involved are listed below. You will also be taking photos of your progress throughout the experiment.
- 2) During the second section (module), you will be collecting data and report your findings of the experiment. This will include data and condition of the eggs before the experiment and data and condition of the egg after the experiment as well as photos taken throughout the experiment.
- 3) In the third module, after you complete the lab experiment and collect your data you will complete a lab report describing your experiment, results, and conclusions. Your complete lab report must be written in your own words and include your own photos taken.

## Materials and Methods

### Materials Needed:

- 3 naked eggs
- White vinegar
- Glass containers large enough to hold a single egg and some liquid with a cover
- Tap water
- Corn syrup
- Another solution of your choice – (colored solutions are always cool)
- A big spoon
- String approximately 12 inches long
- Ruler with centimeters being denoted
- Scale
- Camera (your phone camera will work)

### Experiment Methods (Take pictures throughout the experiment):

- **How to Make Naked Eggs:**
  1. Gently place your eggs into their individual containers.
  2. Add enough vinegar to cover the eggs. Cover the containers and put them into the refrigerator for 48 hours.
    - FYI: Notice that bubbles form on the eggs. Vinegar contains acetic acid, which breaks apart the solid calcium carbonate crystals that make up the eggshell into calcium and carbonate ions. The calcium ions float free while the carbonate goes to make carbon dioxide – the bubbles you see.
  3. After 48 hours, scoop the eggs out of the vinegar with the big spoon and gently rinse them off with tap water. **Do not pick at the eggs – they will break!**
    - If any of the egg membranes have broken you need to throw these eggs away – you cannot use them for the experiment. This is why I encourage five eggs to begin with.
- **Note:** Make sure you wash your hands after each and every time you handle the eggs – they are raw and I don't want you to get sick.

### Osmosis Experiment Methods

- Once you have created your naked eggs, you are ready to begin the osmosis experiment (Remember to take pictures of the eggs, especially the before and after!!)
  1. Start by determining the width of each naked egg.
    - Wrap the string around the middle (width not length) of the egg, holding your fingers on the strings where the string came together, then lay the string

out on the centimeter side of your ruler to determine the eggs circumference (record in cm).

- Make sure you keep track of which egg is which.
2. After you determine the width of the eggs, you will need to record the weight of each egg in grams. You will do this by utilizing the balance scale that your instructor will provide.

During this next phase of the lab you will be testing and recording data for three different eggs at the same time and they will need to be in separate containers.

3. Place one of your eggs into a small container and add enough corn syrup (hypertonic solution) to cover the egg. Cover the container and put it into the refrigerator for 24 hours.
4. Next, place one of your eggs into a small container and add enough tap water (hypotonic solution) to cover the egg. Cover the container and put it into the refrigerator for 24 hours.
5. Finally, place one of your eggs into a small container but this time I want you to choose what type of solution that the egg is submerged in. Cover the container and put it into the refrigerator for 24 hours.
6. After 24 hours, gently remove the each egg from their respective solutions, rinse and dry gently.
7. With your string, obtain and record the circumference of each egg as well as any observations that you notice.
8. Once all measurements and observations have been obtained and recorded, you can dispose of the eggs and clean all equipment used.

#### **Hypotheses:**

- What do you think will happen to the mass of the egg soaked in distilled water and why?
  
  
  
  
  
  
  
  
  
  
- What do you think will happen to the mass of the egg soaked in syrup and why?



## Biology I

### Osmosis – Naked Egg Lab II

#### Results:

- **Mass:** Calculate the percentage change in mass of each egg:
  - $\text{Percent Change} = [(\text{Final Mass} - \text{Initial Mass}) / \text{Initial Mass}] \times 100$

|                    | Initial Mass of Egg (g) | Final Mass of Egg (g) | Change of Mass (g) (Final-Initial) | Percent Change |
|--------------------|-------------------------|-----------------------|------------------------------------|----------------|
| Egg 1 (Water)      |                         |                       |                                    |                |
| Egg 2 (Corn Syrup) |                         |                       |                                    |                |

- **Circumference:** Calculate the percentage change in circumference (Cir) of each egg:
  - $\text{Percent Change} = [(\text{Final Cir} - \text{Initial Cir}) / \text{Initial Cir}] \times 100$

|                    | Initial Cir. of Egg (cm) | Final Cir. of Egg (cm) | Change of Cir (cm) (Final-Initial) | Percent Change |
|--------------------|--------------------------|------------------------|------------------------------------|----------------|
| Egg 1 (Water)      |                          |                        |                                    |                |
| Egg 2 (Corn Syrup) |                          |                        |                                    |                |

**Questions:**

Answer the following questions using COMPLETE SENTENCES!

1. Why were the eggs originally soaked in vinegar?
2. What was the appearance of the egg soaked in distilled water?
3. What happened to the circumference of the egg soaked in distilled water and WHY?
4. What was the appearance of the egg soaked in syrup?
5. What happened to the circumference of the egg soaked in syrup and WHY?
6. Which egg was soaked in a hypertonic solution? EXPLAIN
7. Which egg was soaked in a hypotonic solution? EXPLAIN
8. Are your hypotheses supported by the data? Why or why not?

## Biology I

### Osmosis – Naked Egg Lab III

#### Composing your lab report:

In this final part of the lab, you will need to write a lab report that will consist of several parts:

- **Introduction** – Includes background information and hypothesis
  - You will need to provide background information on the concept of osmosis.
  - Use lecture materials, your text and the internet to help you out
  - Be sure to discuss how osmosis works and also define the terms hypertonic and hypotonic
  - Use your own words and explain to the reader (assume they do not know much about the topic) the purpose of the experiment and any information you feel they need to know.
  
- **Hypothesis** – Give an educated guess on what will happen to the condition of the eggs.
  - Your hypothesis should be specific on what you believe will happen to each egg in the different solutions.
  - The hypothesis should be testable, so make sure you are describing an aspect of the experiment that is measurable.
  
- **Materials and Methods** – How to complete the experiment
  - In paragraph format, tell the reader how they would do the experiment.
  - DO NOT simply copy the instructions I gave you.
  - Someone should be able to read this section and replicate the experiment.
  
- **Results** – Brief verbal summary, data table and/or graph
  - **You must use data tables or graphs to report measurements.**
  - You also need to report your written observations of the eggs.
  - This section just reports your data that you obtained – it does not include your interpretation of the data.
    - Meaning, tell what you saw/measured, not what you believe happened.
    - **Example:** Include “egg increased in size by 5 cm and appeared cloudy in color”, DO NOT include “the water moved into the egg by osmosis and it increased in size”.
  
- **Discussion** – This section should include substantial information!
  - Tell me in your words what conclusions you drew from the data that you obtained.
  - Was your hypothesis supported or rejected?
  - How would you do the experiment differently in the future?

- This is your time to tell me what you think was going on in the experiment.
- You should summarize the whole experiment, relating back to your introduction.
- Use substantial depth of thought, analyzing your data and telling the reader why you obtained the results you did.
- Review the lab report guidelines for this section.

Your lab report needs to be at least two typed pages in length.

**YOUR REPORT MUST INCLUDE PICTURES OF YOUR EGGS THROUGHOUT THE LAB PROCEDURE.**

Embed photos into your lab report how you see fit, and make sure they are labeled appropriately.

**Grading Rubric:**

|                                        |               |
|----------------------------------------|---------------|
| <b>Introduction</b>                    | <b>10 pts</b> |
| <b>Materials and Methods</b>           | <b>10 pts</b> |
| <b>Results</b>                         | <b>10 pts</b> |
| <b>Discussion</b>                      | <b>10 pts</b> |
| <b>Evidence (Pictures) and Support</b> | <b>40 pts</b> |
| <b>Clarity and Organization</b>        | <b>10 pts</b> |
| <b>Language and Grammar</b>            | <b>10 pts</b> |

# Principles of Biology

## Measurements I

### Metric System

Scientists throughout the world use a standardized system of measurements called the **metric system**. The metric system is also used in everyday life virtually everywhere except the United States. With few exceptions (e.g. liter bottles of soda, etc.), most measurements in the United States use the English system of pounds, inches, feet, and so on.

Scientists make all of their measurements in the metric system; they do not routinely convert from one system to another. Thus, this exercise will not involve conversions from the English to metric systems. Rather, this exercise will introduce you to making metric measurements of length, mass, and volume.

Metric units commonly used in biology include

- meter (m) – The basic unit of length
- liter (L) – the basic unit of volume
- gram (g) – the basic unit of mass
- degree Celsius ( $^{\circ}\text{C}$ ) – the basic unit of temperature

Unlike the English system with which you are already familiar, the metric system is based on units of ten. This simplifies conversion from one metric-unit to another (e.g. kilometers to meters). This base-ten system is similar to our monetary system, in which 10 cents equals a dime, 10 dimes equals a dollar, and so forth. Units of ten in the metric system are indicated by Latin and Greek prefixes placed before the base units:

| Prefix (Latin) | Division of Metric Unit | Scientific Notation |
|----------------|-------------------------|---------------------|
| deci (d)       | 0.1                     | $10^{-1}$           |
| centi (c)      | 0.01                    | $10^{-2}$           |
| milli (m)      | 0.001                   | $10^{-3}$           |
| Prefix (Greek) | Multiple of Metric Unit | Scientific Notation |
| deca (da)      | 10                      | $10^1$              |
| hecto (h)      | 100                     | $10^2$              |
| kilo (k)       | 1000                    | $10^3$              |

These are examples of conversion of quantities in the metric system:

- 1 meter = 10 decimeters = 100 centimeters = 1000 millimeters
- 1 meter = 0.1 decameters = 0.01 hectometers = 0.001 kilometers

#### 1. Make the following conversions:

- 1 liter = \_\_\_\_\_ milliliters
- 67.3 grams = \_\_\_\_\_ decagrams
- 10 meter = \_\_\_\_\_ kilometers
- 95 kilograms = \_\_\_\_\_ grams

- 1 l = \_\_\_\_\_ cl = \_\_\_\_\_ ml
- 92.4 mg = \_\_\_\_\_ g = \_\_\_\_\_ hg
- 10 km = \_\_\_\_\_ m = \_\_\_\_\_ dm

**2. Make the following measurements:**

Length of this page \_\_\_\_\_ mm

Width of this page \_\_\_\_\_ mm

Area of this page  
(Area = Length x Width) \_\_\_\_\_ m<sup>2</sup>

Height of coffee mug \_\_\_\_\_ d

Height of ceiling \_\_\_\_\_ da

Your height \_\_\_\_\_ cm

**3. Make the following measurements of volume:**

Measure the milliliters needed to fill a coffee cup \_\_\_\_\_ ml

Measure the liters in the large pitcher \_\_\_\_\_ l

**4. Measure the displacement of a solid object by water:**

Pencil volume \_\_\_\_\_ ml

Rock \_\_\_\_\_ cl

**5. Make metric measurements of mass:**

Quarter \_\_\_\_\_ dg

Paper clip \_\_\_\_\_ cg

Light Colored Rock \_\_\_\_\_ g

Dark Colored Rock \_\_\_\_\_ da

# Principles of Biology

## Measurements II

### Statistics

**Statistics** is a tool used to answer general questions on the basis of a limited amount of specific data. Statistics allow us to make decisions about a population based on a sample of that population rather than on the entire population. Consequently, the use of statistics enables us to make decisions even though we have incomplete data about a population. Although this may seem unscientific, we do it all the time; for example, we diagnose disease with a drop of blood. Statistics-based decisions are necessary when it is impossible or unrealistic to analyze an entire population.

Below are a few basic tests that you'll use to understand numerical data:

- **Mean** – The arithmetic average of measurements
  - Chance errors in measurements tend to cancel themselves when means are calculated
    - A value that is too high because of random error is often balanced by a value that is too low for the same reason
- **Median** – The middle value of a group of measurements
- **Range** – The difference between the extreme measurements (smallest to largest)
  - The range provides a sense of the variation of the samples but can be artificially inflated by one or two extreme values
- **Standard Deviation** – Measures how measurements vary around a mean

#### Example 1:

##### Mean

- Consider a sample consisting of 14 shrimp having the following lengths (all in mm):

80 69 62 74 69 51 45 40 9 64 65 64 61 67

- What is the mean of these samples? \_\_\_\_\_

##### Median

- Determine the mean by arranging the measurements in numerical order:

9 40 45 51 61 63 64 64 65 67 69 69 73 80

- What is the mean of these samples? \_\_\_\_\_

#### Question:

- What would be the median if the 9 mm long shrimp was not in the sample?
- What would be the mean if the 9 mm long shrimp was not in the sample?

### Example 2:

#### Range

- Consider these samples of shrimp length in mm:

**Sample 1:** 25 35 32 28

**Sample 2:** 15 17 10 20

- What is the mean for Sample 1? \_\_\_\_\_
- What is the mean for Sample 2? \_\_\_\_\_

#### Question:

- Could two samples have the same mean but different ranges? Explain.
- Could two samples have the same range but different means? Explain.

### Example 3:

#### Standard Deviation

- Consider a group of shrimp that are 22, 19, 18, and 21cm in length. The mean length of the shrimp is 20 cm.
  - For **Standard Deviation**, consider the following equation:

$$S = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}}$$

**S** = Standard Deviation

**Σ** = Summation

**x<sub>i</sub>** = Sample value

**$\bar{x}$**  = Mean of samples

**n** = Total number of samples

- First, we must calculate the **Sum of Squared Deviation**:

$$\sum (x_i - \bar{x})^2$$

- Note: Deviation** is the distance of a single data point from the mean



**Remember:** The shrimp are 22, 19, 18, and 21cm in length

| Sample Value ( $x_i$ ) | Mean ( $\bar{x}$ ) | Deviation | (Deviation) <sup>2</sup> |
|------------------------|--------------------|-----------|--------------------------|
| 22 cm                  | 20 cm              | 2 cm      | 4 cm <sup>2</sup>        |
| 19 cm                  | 20 cm              | -1 cm     | 1 cm <sup>2</sup>        |
| 21 cm                  | 20 cm              | 1 cm      | 1cm <sup>2</sup>         |
| 18 cm                  | 20 cm              | -2 cm     | 4 cm <sup>2</sup>        |

**Sum of Squared Deviation = 10 cm<sup>2</sup>**

- Next, we need to determine **Variance**:

$$\frac{\sum (x_i - \bar{x})^2}{n - 1}$$

- Also said, **Variance** = Sum of Squared Deviations ÷ n -1
  - The sum of squared deviations (10 cm<sup>2</sup>) divided by the number of samples minus 1 (4 - 1 = 3)
    - 10/3 = 3.3cm<sup>2</sup>

- Finally, we calculate **Standard Deviation**:

$$S = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}}$$

- Also said, SD =  $\sqrt{\text{Variance}}$ 
  - $S = \sqrt{3.3 \text{ cm}^2}$
  - $S = 1.8 \text{ cm}$
- The standard deviation is usually reported with the mean and a statement such as, "The mean length of the shrimp was 20 ± 1.8 cm."
  - Standard deviation help to understand the spread or variation of the samples.

**Gather and analyze the following data:**

- Use a meter stick to measure your height in centimeters = \_\_\_\_\_ cm
- Record your height and gender (M = male or F = female) on the board
- After all your classmates reported their results, calculate the following:
  - Size of sample:**
    - All classmates \_\_\_\_\_
    - Male classmates \_\_\_\_\_
    - Female classmates \_\_\_\_\_
  - Average Height:**
    - All classmates \_\_\_\_\_
    - Male classmates \_\_\_\_\_
    - Female classmates \_\_\_\_\_

- | Student | Sample Value ( $x_i$ ) | Mean ( $\bar{x}$ ) | Deviation | (Deviation) <sup>2</sup> |
|---------|------------------------|--------------------|-----------|--------------------------|
| 1       |                        |                    |           |                          |
| 2       |                        |                    |           |                          |
| 3       |                        |                    |           |                          |
| 4       |                        |                    |           |                          |
| 5       |                        |                    |           |                          |
| 6       |                        |                    |           |                          |
| 7       |                        |                    |           |                          |
| 8       |                        |                    |           |                          |
| 9       |                        |                    |           |                          |
| 10      |                        |                    |           |                          |
| 11      |                        |                    |           |                          |
| 12      |                        |                    |           |                          |
| 13      |                        |                    |           |                          |
| 14      |                        |                    |           |                          |
| 15      |                        |                    |           |                          |
| 16      |                        |                    |           |                          |
| 17      |                        |                    |           |                          |
| 18      |                        |                    |           |                          |
| 19      |                        |                    |           |                          |
| 20      |                        |                    |           |                          |
| 21      |                        |                    |           |                          |
| 22      |                        |                    |           |                          |
| 23      |                        |                    |           |                          |
| 24      |                        |                    |           |                          |
| 25      |                        |                    |           |                          |

- **Calculate Variance:**
- **Calculate Standard Deviation and give a statement describing the height of your population:**

**Biology**  
**Scientific Method Review**

**Name:** \_\_\_\_\_

**Temperature and Rubber Ball Questions:**

1. What is the dependent variable in the experiment?
2. What is the independent variable in the experiment?
3. What is the control in the experiment?
4. List all the errors you noticed regarding the experiment.

**Critical Thinking:**

5. Although the scientific method is used by most of the sciences, it can also be applied to everyday situations. Think about a situation or problem that you may have at home, at school, etc., and apply the scientific method to solve it. How would you test it? What would be the test and control groups. What are the independent and dependent variables?

**List the independent and dependent variables for the following hypotheses:**

6. **If** skin cancer is related to ultraviolet light, **then** people with a high exposure to UV light will have a higher frequency of skin cancer.
  - Independent variable –
  - Dependent variable –
7. **If** leaf color change is related to temperature, **then** exposing plants to low temperatures will result in changes in leaf color.
  - Independent variable –
  - Dependent variable –
8. **If** the speed of plant germination is related to the hardness of the hull of its seed, **then** softening the seed with water or a weakly acidic solution prior to planting will hasten germination.
  - Independent variable –
  - Dependent variable –
9. **If** photosynthesis is related to light energy, **then** the portions of a leaf shaded from light will test negative for starch since starch is a product of photosynthesis.
  - Independent variable –
  - Dependent variable –
10. **If** animal metabolism is related to temperature, **then** increasing resting room temperature will increase animal metabolism (as measured by carbon dioxide gas production which is one of the waste products of animal metabolism).
  - Independent variable –
  - Dependent variable –
11. **If** root growth is related to gravity, **then** roots will always turn toward the earth regardless of a seed's orientation.
  - Independent variable –
  - Dependent variable –

**For each experiment, list the independent variable, dependent variable, control, and constant:**

12. Alex wanted to find out what toothpaste made teeth the cleanest. Every day she brushed her teeth with a different product and then took a plaque test to see how much plaque was left. She used Crest, Colgate, Close-up, and water.

- Independent variable –
- Dependent variable –
- Control –
- Constant Variable –

13. Caelyn wanted to find out what shampoo made her hair the shiniest. Every day she washed her hair with different shampoos and then rated how shiny her hair was, on a scale from 1-10. She used Pantene, Herbal Essences, L'Oreal, and just water.

- Independent variable –
- Dependent variable –
- Control –
- Constant Variable –

14. Fredrick wanted to find out what soil works best for growing roses. He grew them in potting soil, clay, sand, and soil he found outside his yard. After one week, he measured their height and how many leaves they had.

- Independent variable –
- Dependent variable –
- Control –
- Constant Variable –

15. Anna wanted to see what battery lasted the longest. She put each battery into a clock and recorded the time that the clock stopped. She used Duracell, Energizer, Kroger brand, and Ever Ready.

- Independent variable –
- Dependent variable –
- Control –
- Constant Variable –



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5788                              |
| Institution        | UNM-MAIN                          |
| Applicant(s)       | mraine@unm.edu, pcheek@unm.edu    |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-01-22 03:35 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Pamela Cheek

### Chief Academic Officer Email

pcheek@unm.edu

### Registrar Name

Michael Raine

### Registrar Email

mraine@unm.edu

### Course's Academic Department

Women Gender and Sexuality Studies

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

GNDR

### Number

2110

### Title

Introduction to Women, Gender, and Sexuality Studies

### Number of credits

3

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

No

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

Yes

## Co-requisite Course

---

### Prefix

NA

---

### Number

NA

---

### Title

NA

## New Mexico Common Course Information

---

### Prefix

GNDR

---

### Number

2110

---

### Title

Introduction to Women, Gender, and Sexuality Studies

## A. Content Area and Essential Skills

---

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

Social & Behavioral Sciences

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication



## Section B. Learning Outcomes

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

Taking the course, students will:

1. Understand foundational concepts, theories, and approaches to gender and sexuality in conjunction with contemporary social justice movements such as feminism.
2. Describe the range of social and political forces that shape and are shaped by gender, sexuality, race /ethnicity, and other intersecting categories of identity.
3. Demonstrate the ability to conduct intersectional analysis.
4. Develop and improve skills in reading, critical thinking, academic writing, and public speaking.

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

NA

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Students demonstrate awareness of genres and mediums and how to apply various genres and mediums in distinct rhetorical situations. They demonstrate written communication through reflective and analytic writing exercises that exercise their strategies for understanding and evaluating messages, theoretical models, and supporting documentation for arguments. They will practice evaluating other's argument and producing their own arguments. Social and verbal communication is practiced during student assignments including topical presentations to the class, small and large group discussions, and audience-aware assignments such as multimodal paper, digital, video and sound projects, testimonials, or peer and family interviews.

Students will demonstrate communication skills through:

- Practicing verbal and written conversation skills through in-class discussions, online discussion boards, and group collaborations.
- Presenting and summarizing information from readings through public speaking and powerpoint demonstrations.
- Applying knowledge of course concepts through audience-aware communication including essays, videos, podcasts, testimonials, or interviews.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

Students work through the process of asking questions, seeking evidence to support answers to those questions, evaluating that evidence, and forming reasoned conclusions. Through application of key concepts

such as intersectionality and interrogating contents and methods from a variety of fields, course participants transfer knowledge from textual evidence to summarize, analyze, and engage with the texts in a critical way. By applying these concepts to their own lived experiences through their assignments, including: journaling, zine-making, essay-writing, testimonials, interviews, and presentations, students develop a personal creative and social skill set. Students develop their own opinions and deepen their engagement with themselves and their own experience of course concepts, methods, and topics that develops their critical thinking in an organic way, so that the experience of critical thinking is enjoyable. This enjoyment facilitates students' sense of deeper meaning with the course content, enabling a sense of ownership over their analytic skills and higher rates of transfer and connection to their everyday life and future schoolwork.

Students will demonstrate critical thinking through:

- Posing problems/questions, acquiring evidence to address the problem/question, evaluating the evidence, and developing conclusions that present answers or solutions to the questions posed.
- Reflecting on their metacognitive learning processes from course experiences, skills, and knowledge through reflective journaling, discussion boards, and course experience surveys.
- Developing personal responses, sharing opinions and debating topics of analysis for increased understanding and questioning surrounding topics and methods presented in the course.

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global** In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.

In this course the students read a variety of texts from multiple perspectives and hear the perspectives of invited guest speakers presenting their experiences in a range of personal, social, cultural, and gendered perspectives. They demonstrate awareness of a range of personal, social, and cultural issues as they relate to their own and other's experiences. They learn to understand the perspectives of other people and to synthesize those perspectives with their own. Students learn about social injustices and solutions from a variety of sexual identities, class positions, races, ethnicities, academic fields, and intersections of those lived experiences. Students read research from interdisciplinary approaches, including psychology, sociology, arts, and the humanities, to apply to their understandings of their lived experiences. They engage in civic discourse by learning to present and support their own positions on local and global issues while acknowledging the positions of others.

Students will demonstrate personal and social responsibility through:

- Engaging in ethical reasoning by applying frameworks and concepts of intersectionality and inequity to their own lives and identities.
- Transferring knowledge from the course to social media, their families, and lived experiences through reflective journaling and interviews with peers.

## Section D. Assessment Plan

[Link to Institution's General Education Assessment Plan](https://assessment.unm.edu/)

<https://assessment.unm.edu/>

# Application History

| Type          | username       | Text                                                        | Timestamp                          |
|---------------|----------------|-------------------------------------------------------------|------------------------------------|
| Submittal     | pcheek@unm.edu | Submitted by pcheek@unm.edu                                 | 2026-01-22 03:35 PM (US /Mountain) |
| Authorization | pcheek@unm.edu | pcheek@unm.edu has authorized the application for submittal | 2026-01-22 03:35 PM (US /Mountain) |
| Authorization | mraine@unm.edu | mraine@unm.edu has authorized the application for submittal | 2026-01-22 10:42 AM (US /Mountain) |
| Authorization | mraine@unm.edu | mraine@unm.edu has added pcheek@unm.edu to the application  | 2026-01-22 10:41 AM (US /Mountain) |
| Created       | mraine@unm.edu | Application started by mraine@unm.edu                       | 2026-01-22 10:33 AM (US /Mountain) |

## Combined UNM General Education Form C and

### New Mexico Curriculum & Articulation Committee (NMCAC) Certification Request

*The information provided on this form will enable review of the proposed general education course by both the UNM Faculty Senate Curricula Committee (see Faculty Handbook A61.2) and submission of the proposed course by the UNM Registrar for review by the New Mexico Curriculum and Articulation Committee (NMCAC). Please use the information below to develop a word document attachment to a Form C, which will then be used by UNM Registrar to initiate review with NMCAC and with FSAC.*

#### 1. Contact Information

|       |                                              |
|-------|----------------------------------------------|
| Name  | Sarah Davis-Secord                           |
| Title | Director, Women Gender and Sexuality Studies |
| Phone | 277-9119                                     |
| Email | scds@unm.edu                                 |

#### 2. Institutional Course Information

|                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Prefix                                                                                                                                                                                                                                                                                                                              | GNDR                                                                                                                                                                                           |
| Number                                                                                                                                                                                                                                                                                                                              | 2110                                                                                                                                                                                           |
| Title                                                                                                                                                                                                                                                                                                                               | Introduction to Women, Gender, and Sexuality Studies                                                                                                                                           |
| Number of credits                                                                                                                                                                                                                                                                                                                   | 3                                                                                                                                                                                              |
| Was this course previously part of the Gen Ed Core Curriculum?                                                                                                                                                                                                                                                                      | no                                                                                                                                                                                             |
| General Education Area (select <u>one</u> )<br>See <a href="http://gened.unm.edu">gened.unm.edu</a> and<br><a href="http://assessment.unm.edu/assessment-types/gened-assessment/essential-skills.html">http://assessment.unm.edu/assessment-types/gened-assessment/essential-skills.html</a> for information<br>about content areas | 1. Communication<br>2. Mathematics and Statistics<br>3. Physical and Natural Sciences<br>4. <b>Social and Behavioral Sciences</b><br>5. Humanities<br>6. Arts and Design<br>7. Second Language |

### 3. Student Learning Outcomes

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

Common Course Student Learning Outcomes: these are the student learning outcomes shared by courses with the same four-digit lower-division course number across multiple higher education institutions in New Mexico. A course may be "unique" to UNM, but it must still be assigned a common course number and the course description and SLOs must be listed with the NMHED. The UNM Assistant Registrar helps faculty register courses in common course numbering.

Find Common Course SLOs at: <http://www.hed.state.nm.us/programs/request-a-change-to-the-nmccns.aspx>.

**Taking the course, students will:**

1. Understand foundational concepts, theories, and approaches to gender and sexuality in conjunction with contemporary social justice movements such as feminism.
2. Describe the range of social and political forces that shape and are shaped by gender, sexuality, race/ethnicity, and other intersecting categories of identity.
3. Demonstrate the ability to conduct intersectional analysis.
4. Develop and improve skills in reading, critical thinking, academic writing, and public speaking.

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

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

Tip for Success: New Mexico Curriculum and Articulation Committee interprets NMHED statute on General Education as limiting institution-specific SLOs to no more than 20% of the total SLOs. So, if there are 10 total SLOs, 8 could be common course numbering SLOs and 2 could be UNM-specific SLOs.

**(syllabus SLOs, continued):**

5. Build more capacity in care through the processing and synthesizing of new and information from others' lived experiences.
6. Develop awareness of current terminology, vocabulary, and primary themes within Women, Gender, and Sexuality studies research.

### 4. UNM General Education Criteria

**Explain how this course will benefit UNM students and why it belongs in the UNM General Education Program.**

- a) Rationale and justification for adding the course to the General Education Program.

How will this course benefit UNM students?

Why does it belong in the General Education Program?

GNDR 2110 presents the theories, methods, and approaches of women and gender studies in a way that is engaging and applicable for students for whom this may be the only course they take in this field, as well as for students who go on to take other classes in the WGSS unit. As a unique offering, it complements and enriches the general education program without course duplication. It teaches modes of learning and critical thinking about self, community, and other that encourage reflection upon community engagement, career paths, and intellectual methods that can be used to support academic inquiry in many fields of study. As an approach founded in the principles of equitable approaches to all people, the course takes an explicitly inclusive approach and asks students to reflect on their own perspectives and the ways that their experiences differ from those of other people and communities. Students learn critical thinking skills, practice written and oral communication, and learn to evaluate evidence and apply theoretical models that can be employed in other areas of study and research.

c) Impact statement on the effect this addition may have upon other departments/courses currently in the General Education Program.

Departments and programs preparing curriculum form course proposals for general education areas outside the department's/program's routine offerings must communicate with the chairs of departments/programs and associate deans of schools and colleges that regularly offer courses within the area of the course proposal. Such communication is essential in order to understand the methods by which component and essential skills in the relevant general education are taught within already-existing courses. The other departments/programs should acknowledge having been informed and are supportive of the proposal or respond with any concerns they may have. The FSCC will consider these concerns and recommend a means for their resolution.

**GNDR 2110** is a unique offering within the GenEd curriculum at UNM, with no other courses presenting a comprehensive approach to intersectional analysis of gender and sexuality within historical and contemporary global contexts. The course complements offerings that focus on identity formation and interdisciplinary approaches to communities based on social and ethnic identities, such as AMST 1140: Introduction to Race, Class, & Ethnicity and CCST 1110: Intro to Comparative & Global Ethnic Studies. Other courses may adopt and employ gendered analysis, but GNDR 2110 is the only offering solely focused on teaching and practicing the methods of analysis and the theories of gender and sexuality.

d) Explanation of how the course meets updated criteria for General Education Program courses, including UNM criteria and NM Higher Education Department criteria on required essential skills adopted by the FSCC (see rubrics below)

**GNDR 2110** meets the criteria for the essential and component skills under the Social and Behavioral Sciences General Education area. The assignments described below teach and reinforce the skills of critical thinking, communication, and personal and social responsibility.

e) Current and predicted enrollments for the next three (3) years.

**GNDR 2110** is taught every semester, enrolling between 50-100 students in each section (we typically offer one in person section and one online section each term). We expect this enrollment to continue apace.

f) Awareness and adoption of UNM General Education Program Assessment posted by the [Office of Assessment](#).

Yes, we are aware of the assessment protocols and will adopt them.

g) Statement of Budget Impact, Faculty Load, and Resources (faculty/facilities) that the department has for teaching the course.

**GNDR 2110** is a core course for the WGSS unit, and is taught by multiple members of the faculty. We also have a dedicated GTA line for training graduate students to offer the course as instructor of record after having assisted the course under a seasoned instructor. Therefore, the course is fully integrated into the faculty resources of the WGSS unit and requires no extra budgetary considerations.

h) Memo from Dean or College Curriculum Committee regarding financial support for five (5) to ten (10) years.

**pasted below**

i) Complete syllabus and course schedule including time on topics and suggested text.

**pasted below**

The following rubric of UNM general education criteria will be used by the Faculty Senate Curricula Committee to evaluate the proposal:

**UNM General Education Program: Rubric for Evaluating Form C Course Additions**

| UNM Criteria for Evaluating Proposed Courses                                                                                                                                                                                                                                                                                                                                                   |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                                                                                                                                                                                                                                                                                                                                                                                                | met/not |
| 1. <i>Of broad and tangible interest and intellectual benefit to many students.</i><br><br>Presents content in a way that will be useful, innovative, and engaging for students for whom this may be the only course in an academic field or area as well as for students who may continue in a discipline; complements and enriches the general education program without course duplication. |         |

|                                                                                                                                                                                           |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 2. <i>Defined by student learning outcomes related to knowledge, understanding, or skills in the liberal arts.</i>                                                                        |  |
| Can be distinguished from the foundation course of an academic major, from a course on a small sub-area of a discipline or field, and from a course with a rotating topic.                |  |
| 3. <i>Designed to introduce students to habits of mind, theories, concepts and methods in a field or area</i>                                                                             |  |
| Provides modes of thinking and learning that contribute to exploration and satisfaction in career, life, or community endeavors.                                                          |  |
| 4. <i>Appropriate for a research university</i>                                                                                                                                           |  |
| Demonstrates scope, quality, accuracy of knowledge and content relative to contemporary scholarship in the field, and addresses diversity, equity, and inclusion in content and delivery. |  |
| 5. <i>Characterized by an inclusive pedagogy</i>                                                                                                                                          |  |
| Seeks to provide enrichment and educational opportunity to all students.                                                                                                                  |  |

### 5. NM Higher Education Department Criteria; demonstration of teaching relevant Essential Skills and component skills for general education area

The State of New Mexico goal for the new model of General Education is to create an intentional curriculum that develops the essential skills that college graduates need to be successful. The New Mexico Curriculum & Articulation Committee will evaluate each certification form to understand how the course introduces, reinforces, and assesses the three essential skills. The defining characteristic of the New Mexico General Education Curriculum Model is its focus on essential skills. Three essential skills are associated with each of seven content areas. Faculty teaching courses within any given content area must weave the three related essential skills and component skills throughout their course while also addressing content knowledge and skills. The UNM Faculty Senate Curricula Committee will use the following rubric to assess whether the course addresses NMHED Essential skills and component skills for the relevant general education area:

| NM HED Criteria/Essential Skills (complete for one area only) |                                                                                  |         |
|---------------------------------------------------------------|----------------------------------------------------------------------------------|---------|
| Essential Skill                                               | Component Skill                                                                  | met/not |
| 1. COMMUNICATION                                              |                                                                                  |         |
| Critical Thinking                                             | Problem setting; Evidence Acquisition; Evidence Evaluation; Reasoning/Conclusion |         |



|                                         |                                                                                                                                                                                                                                                                        |  |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Communication                           | Genre and Medium Awareness, Application, and Versatility; Strategies for Understanding and Evaluating Messages; Evaluation and Production of Arguments                                                                                                                 |  |
| Information & Digital Literacy          | (3 of the following 4): Authority and Value of Information; Digital literacy; Information structures; research as Inquiry                                                                                                                                              |  |
| <b>2. MATHEMATICS &amp; STATISTICS</b>  |                                                                                                                                                                                                                                                                        |  |
| Critical Thinking                       | Problem setting; Evidence Acquisition; Evidence Evaluation; Reasoning/Conclusion                                                                                                                                                                                       |  |
| Communication                           | Genre and Medium Awareness, Application, and Versatility; Strategies for Understanding and Evaluating Messages; Evaluation and Production of Arguments                                                                                                                 |  |
| Quantitative Reasoning                  | Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; Application of Quantitative Models                                                                                                                                       |  |
| <b>3. PHYSICAL AND NATURAL SCIENCES</b> |                                                                                                                                                                                                                                                                        |  |
| Critical Thinking                       | Problem setting; Evidence Acquisition; Evidence Evaluation; Reasoning/Conclusion                                                                                                                                                                                       |  |
| Personal and Social Responsibility      | (2 of the following 5): intercultural reasoning and intercultural competence; sustainability and the natural and human worlds; ethical reasoning; collaboration skills, teamwork and value systems; Civic discourse, civic knowledge and engagement – local and global |  |
| Quantitative Reasoning                  | Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; Application of Quantitative Models                                                                                                                                       |  |

| 4. SOCIAL AND BEHAVIORAL SCIENCES  |                                                                                                                                                                                                                                                                                 |  |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Critical Thinking                  | Problem setting; Evidence Acquisition; Evidence Evaluation; Reasoning/Conclusion                                                                                                                                                                                                |  |
| Communication                      | Genre and Medium Awareness, Application, and Versatility; Strategies for Understanding and Evaluating Messages; Evaluation and Production of Arguments                                                                                                                          |  |
| Personal and Social Responsibility | (2 of the following 5):<br>intercultural reasoning and intercultural competence;<br>sustainability and the natural and human worlds; ethical reasoning; collaboration skills, teamwork and value systems;<br>Civic discourse, civic knowledge and engagement – local and global |  |
| 5. HUMANITIES                      |                                                                                                                                                                                                                                                                                 |  |
| Critical Thinking                  | Problem setting; Evidence Acquisition; Evidence Evaluation; Reasoning/Conclusion                                                                                                                                                                                                |  |
| Information and Digital Literacy   | (3 of the following 4): Authority and Value of Information; Digital literacy; Information structures; research as Inquiry                                                                                                                                                       |  |
| Personal and Social Responsibility | (2 of the following 5):<br>intercultural reasoning and intercultural competence;<br>sustainability and the natural and human worlds; ethical reasoning; collaboration skills, teamwork and value systems;<br>Civic discourse, civic knowledge and engagement – local and global |  |
| 6. SECOND LANGUAGE                 |                                                                                                                                                                                                                                                                                 |  |
| Critical Thinking                  | Problem setting; Evidence Acquisition; Evidence Evaluation; Reasoning/Conclusion                                                                                                                                                                                                |  |

|                                    |                                                                                                                                                                                                                                                                           |  |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Communication                      | Genre and Medium Awareness, Application, and Versatility; Strategies for Understanding and Evaluating Messages; Evaluation and Production of Arguments                                                                                                                    |  |
| Personal and Social Responsibility | (2 of the following 5):<br>intercultural reasoning and intercultural competence; sustainability and the natural and human worlds; ethical reasoning; collaboration skills, teamwork and value systems; Civic discourse, civic knowledge and engagement – local and global |  |
| 7. ARTS AND DESIGN                 |                                                                                                                                                                                                                                                                           |  |
| Critical Thinking                  | Problem setting; Evidence Acquisition; Evidence Evaluation; Reasoning/Conclusion                                                                                                                                                                                          |  |
| Communication                      | Genre and Medium Awareness, Application, and Versatility; Strategies for Understanding and Evaluating Messages; Evaluation and Production of Arguments                                                                                                                    |  |
| Personal and Social Responsibility | (2 of the following 5):<br>intercultural reasoning and intercultural competence; sustainability and the natural and human worlds; ethical reasoning; collaboration skills, teamwork and value systems; Civic discourse, civic knowledge and engagement – local and global |  |

**a. Three Essential Skills Narratives (one for each essential skill assigned to the gen ed area)**

Write a short (~300 words) narrative for each of the three essential skills aligned with the content area in which your course falls. Explain 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. Narratives should describe what activities students **do** to develop the essential skills throughout the course (for example, "students demonstrate their capacity for *problem setting* in a pre-writing assignment focused on proposing a research question based on initial exploration of three scholarly studies about controlled burns in woodlands").

**Be sure to address all of the component skills for each of the three essential skills.**

*Please refer to this description of component skills: [https://hed.state.nm.us/resources-for-schools/public\\_schools/general-education](https://hed.state.nm.us/resources-for-schools/public_schools/general-education). Note that only 2 of 5 possible component skills must be addressed for Personal and Social Responsibility and only 3 of 4 possible component skills must be addressed for Information and Digital Literacy.*

### **Narrative 1 on Essential Skill 1 and Component Skills (<300 words):**

#### **Communication**

Students demonstrate awareness of genres and mediums and how to apply various genres and mediums in distinct rhetorical situations. They demonstrate written communication through reflective and analytic writing exercises that exercise their strategies for understanding and evaluating messages, theoretical models, and supporting documentation for arguments. They will practice evaluating other's argument and producing their own arguments. Social and verbal communication is practiced during student assignments including topical presentations to the class, small and large group discussions, and audience-aware assignments such as multimodal paper, digital, video and sound projects, testimonials, or peer and family interviews.

*Students will demonstrate communication skills through:*

- Practicing verbal and written conversation skills through in-class discussions, online discussion boards, and group collaborations.
- Presenting and summarizing information from readings through public speaking and powerpoint demonstrations.
- Applying knowledge of course concepts through audience-aware communication including essays, videos, podcasts, testimonials, or interviews.

### **Narrative 2 on Essential Skill 2 and Component Skills (<300 words):**

#### **Personal and Social Responsibility**

In this course the students read a variety of texts from multiple perspectives and hear the perspectives of invited guest speakers presenting their experiences in a range of personal, social, cultural, and gendered perspectives. They demonstrate awareness of a range of personal, social, and cultural issues as they relate to their own and other's experiences. They learn to understand the perspectives of other people and to synthesize those perspectives with their own. Students learn about social injustices and solutions from a variety of sexual identities, class positions, races, ethnicities, academic fields, and intersections of those lived experiences. Students read research from interdisciplinary approaches, including psychology, sociology, arts, and the humanities, to apply to their understandings of their lived experiences. They engage in civic discourse by learning to present and support their own positions on local and global issues while acknowledging the positions of others.

*Students will demonstrate personal and social responsibility through:*

- Engaging in ethical reasoning by applying frameworks and concepts of intersectionality and inequity to their own lives and identities.
- Transferring knowledge from the course to social media, their families, and lived experiences through reflective journaling and interviews with peers.

### **Narrative 3 on Essential Skill 3 and Component Skills (<300 words):**

#### **Critical Thinking**

Students work through the process of asking questions, seeking evidence to support answers to those questions, evaluating that evidence, and forming reasoned conclusions. Through application of key concepts such as intersectionality and interrogating contents and methods from a variety of fields, course participants transfer knowledge from textual evidence to summarize, analyze, and engage with the texts in a critical way. By applying these concepts to their own lived experiences through their assignments, including: journaling, zine-making, essay-writing, testimonials, interviews, and presentations, students develop a personal creative and social skill set. Students develop their own opinions and deepen their engagement with themselves and their own experience of course concepts, methods, and topics that develops their critical thinking in an organic way, so that the experience of critical thinking is enjoyable. This enjoyment facilitates students' sense of deeper meaning with the course content, enabling a sense of ownership over their analytic skills and higher rates of transfer and connection to their everyday life and future schoolwork.

*Students will demonstrate critical thinking through:*

- Posing problems/questions, acquiring evidence to address the problem/question, evaluating the evidence, and developing conclusions that present answers or solutions to the questions posed.
- Reflecting on their metacognitive learning processes from course experiences, skills, and knowledge through reflective journaling, discussion boards, and course experience surveys.
- Developing personal responses, sharing opinions and debating topics of analysis for increased understanding and questioning surrounding topics and methods presented in the course.

#### **b. Sample Assignment**

Provide a sample assignment (exam, project, paper prompt, etc.) demonstrating how students will be assessed on learning an essential skill and one or more related component skills.

Tip for success: refer to the assignment in one of your narratives on how essential skills are taught.

**pasted below**

# **GNDR 2110.002: Introduction to Women, Gender, and Sexuality Studies**

## **Course Description**

This course introduces students to key concepts, debates, and analytical tools informing women, gender, and sexuality studies. As an interdisciplinary field of study, women, gender, and sexuality studies employs academic perspectives from a range of disciplines and theoretical approaches. It also incorporates lived experience and social location into its object of analysis. This course will develop tools through readings and assignments that critically analyze how gender and sexuality are shaped by different networks of power and social relations and demonstrate how the intersections of race, class, disability, national status, and other categories of identity and difference are central to their understanding and deployment. There are no prerequisites to this course.

## **Student Learning Outcomes**

The following are the objectives for the course. Each module will have specific learning objectives listed on the Overview Page. The activities in that module (i.e.: discussions, assignments and assessments) are developed so that you can demonstrate you have met these objectives:

1. Understand foundational concepts, theories, and approaches to gender and sexuality in conjunction with contemporary social justice movements such as feminism.
2. Describe the range of social and political forces that shape and are shaped by gender, sexuality, race/ethnicity, and other intersecting categories of identity.
3. Demonstrate the ability to conduct intersectional analysis.
4. Develop and improve skills in reading, critical thinking, academic writing, and public speaking.
5. Build more capacity in care through the processing and synthesizing of new and information from others' lived experiences.
6. Develop awareness of current terminology, vocabulary, and primary themes within Women, Gender, and Sexuality studies research.

## **TECHNICAL SKILLS**

In order to participate and succeed in this class, you will need to be able to perform the following basic technical tasks:

- Use Canvas (help documentation located in “Help”>”UNM Canvas Help Site” link on left course menu, and also at [Online Student Documentation](#) ).
- Use email – including attaching files, opening files, downloading attachments
- Copy and paste within applications including Microsoft Office
- Open a hyperlink (click on a hyperlink to get to a website or online resource)
- Use Microsoft Office applications\*
  - Create, download, update, save and upload MS Word documents
  - Create, download, update, save and upload MS PowerPoint presentations
  - Create, download, update, save and upload MS Excel spreadsheets
  - Download, annotate, save and upload PDF files
- Use the in-course web conferencing tool (Zoom)
- Download and install an application or plug in – required for web conferencing sessions

\* Note: We are very unlikely to use Excel in this course and PowerPoint would be optional as a part of a final project. Zoom would only be used for meetings with instructors (office hours or other appointments).

## TECHNICAL REQUIREMENTS

### Computer

- A high speed internet connection is highly recommended.
- Supported browsers include: [Detailed Supported Browsers and Operating Systems](#)
- Any computer capable of running a recently updated web browser should be sufficient to access your online course. However, bear in mind that processor speed, amount of RAM and Internet connection speed can **greatly** affect performance. Many locations offer free high-speed Internet access including [UNM’s Computer Pods](#).
- Microsoft Office products are available free for all UNM students (more information on the [UNM IT Software Distribution and Downloads page](#))

**For UNM Canvas Technical Support: (505) 277-0857 (24/7) or visit the [Canvas Info Site](#)**

**Canvas outages: Unexpected Canvas system outages are rare but, if they occur, I will advise everyone on how to proceed.**

### Web Conferencing

Web conferencing will be used in this course only for appointments with your instructors.

For the online sessions, you will need:

- A headset with microphone. Headsets are widely available at stores that sell electronics, at the UNM Bookstore, or online.

- A high-speed internet connection is highly recommended for these sessions. Please test your wireless Internet connection for audio and/or video quality prior to web conferencing.
- For UNM Web Conference Technical Help: (505) 277-0857

## Tracking Course Activity

Canvas automatically records all students' activities including: your first and last access to the course, the pages you have accessed, the number of discussion messages you have read and sent, web conferencing, discussion text, and posted discussion topics. This data can be accessed by the instructor to evaluate class participation and to identify students having difficulty

## Netiquette

If you would like to review the basics of online netiquette this [Netiquette document](#) is a great resource.

## COURSE EXPECTATIONS

### Expectations for Students in this course:

#### What do I expect from you?

1. **Be present and engaged in our course materials every week during the semester.** Though this course will run asynchronously that does not mean that you can wait until the last weeks of the semester and hope to finish the course. Regular participation is necessary to pass the course, including completing module assignments, posting to the discussion boards, and working regularly on your final project throughout the second half of the term. Most successful students find that they spend 9-12 hours per week in a course like this one.
2. **Engage with our course texts actively.** That means you come away from—for example—reading an article with at least one specific passage about which you have something to say. Most of our discussions and response assignments will ask you to discuss specific passages so getting in the habit of active engagement with texts will help you throughout the term.
3. **Stay in touch with me (your instructor).** If you need anything, are having an issue (academic or personal) that affects your class performance, or are just feeling confused or unhappy with something regarding the class, please address it with me. With any problems related to the class, I'm better equipped to help you if I know about them sooner rather than later. If you can't make it to my scheduled office hours, do contact me to make an appointment at another time.
4. **Have regular access to a computer with a reliable (high speed is much preferred) internet connection and a pdf reader.** For meetings with your instructor or your teaching assistant, you'll need a computer with a working camera and microphone. Turn in all your written work online through Canvas. If you run into a technical problem using Canvas, get help via the Help menu and [UNM Canvas Support](#). If you need help with technology or internet connectivity access, one place to start is [Computing @ UNM](#).
5. **Learn how to navigate in Canvas,** to use the Canvas Inbox to stay in touch with your instructors, to stay on top of course announcements through Canvas, and to address any technological issues they experience without delay. Most of us are new to Canvas and are learning together how to use it during this semester. While there will be some bumps along the way, there are also many resources available to



you to help you get up to speed with Canvas. Many of these are included in the Welcome Module of this course, or can be found linked at any time in the Navigation panel found on any Canvas page.

**6. Turn in original work** (by this I mean, work that you completed yourself, per the guidelines of the assignment) and make your use of sources clear through proper citation. When you use a resource in work submitted for this class, document how you used it and distinguish clearly between your original work and the material taken from the resource. *This includes the use of material generated by any AI source.* Please see my separate statement on the use of AI-generated materials in our course work, posted in the Welcome Module on Canvas. Be familiar with UNM's [Policy on Academic Dishonesty](#) and the [Student Code of Conduct](#) which outline academic misconduct defined as plagiarism, cheating, fabrication, or facilitating any such act.

**7. Turn in your work on time.** All assignments are due at the end (11:59 PM) of the day that they are due. This course is set up in modules, most of which are two weeks long. Typically, the assignments from a given module are due at the end of that module. Some assignments, like the midterm assignment and the final project, will have different due dates. Requests for extensions on assignments will be considered on a case by case basis. If you're struggling with these assignments, please let me know as soon as possible so we can work out a feasible timeline for you.

**8. Complete all of the assigned work for the course and submit it through Canvas.** You cannot progress through the course without completing the assignments from at a minimum five of the seven modules as well as the midterm and final projects. I will drop students who do not participate in the discussions regularly.

**9. Maintain a productive and respectful attitude toward your fellow students,** particularly in our discussions. Due to the nature of this course, we may read about and discuss some sensitive, heated, or fraught issues. This makes an atmosphere of productive communication all the more essential for the course. If you need to review the basics of netiquette, please see the document linked below. Stay in communication with your fellow students when this is required by the course (only for peer review this term).

## TEXTBOOK AND SUPPLEMENTAL MATERIALS

### Required Textbooks:

- *Gender Through the Prism of Difference*, 6<sup>th</sup> edition. Oxford University Press. Available through the UNM bookstore.
- All other course materials will be available through Canvas.

### Assignments:

In addition to the activities in the Welcome Module, your assignments for this course include:

- 7 Reading Quizzes
- 7 Response Assignments
- 7 Sets of Discussion Posts and Responses
- 1 Midterm Assignment
- 1 Final Project

Please see Canvas pages within the course giving the detailed assignment descriptions for each of these for more details, including point values and due dates.

### **What can you expect from me?**

1. I will strive to respond to all student messages within 24 hours during the week (M-F). I will respond to all messages received over the weekend by the end of the day on Monday.
2. I will hold my virtual office hours every week and be ready and present to talk to you about any concerns you have about the course. If I can't make my office hours for some reason, I'll post a course announcement about this and schedule a make up time. So please use my office hours to come and talk to me about anything you're concerned about, or just want to discuss!
3. I will return assignments from a given module within a week of the close of that module, using the posted assessment rubrics.
4. I will treat you fairly according to my posted policies, while also maintaining UNM's policies. If you need some extra help with something, or are struggling with the assignments I've given or their deadlines, please talk to me about it, as soon as possible, and I'll do my best to help you. I'll consider extensions on a case-by-case basis; I'd appreciate it if you'd let me know if you need one as soon as possible but at least 24 hours before a due date.
5. If you haven't participated in any course activities for more than two weeks, I may drop you from the course. If you are having a problem that necessitates your being away from the course for a period of time greater than two weeks, please let me know what's going on as soon as you can.

**A Note on Final Assessment:** You may earn a maximum of 1000 points in this class. Each assignment has been given a designated number of points out of the total of 1000. When I do my final assessment of course work, I will add up your points and convert that number into a percentage, which will then be translated into a letter grade on the following scale: 100-90 = A; 89- 80 = B; 79-70= C; 69-60= D; 59 or below = F. Grades falling in the top or bottom 1/3 of any of the above bands will receive an appropriate +/- designation as well, with the exception of A+ which I reserve for those students earning a grade of 99% or higher in the course.

## **UNM POLICIES**

### **Credit Hours Statement:**

This is a three credit-hour course delivered in an entirely asynchronous online modality over the Spring 2025 semester. Please plan for a *minimum* of 9 hours per week to learn course materials and complete assignments.

### **Gender Discrimination:**

UAP 2720 and 2740. Our classroom and university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. If you ever need assistance or have

concerns about incidents that violate this principle, please access campus support resources. These include confidential services at [LoboRESPECT Advocacy Center](#), [the Women's Resource Center](#), and the [LGBTQ Resource Center](#). The University of New Mexico prohibits discrimination on the basis of sex (including gender, sex stereotyping, gender expression, and gender identity). UNM faculty and graduate teaching assistants are considered "responsible employees." "Responsible employees" must [communicate reports](#) of sexual harassment, sexual misconduct and sexual violence to [Compliance, Ethics and Equal Opportunity](#). For more information on the campus policy regarding sexual misconduct, reporting, and reporting for "responsible employees," please see UAP 2720 and UAP 2740.

[Read more about campus policy regarding sexual misconduct.](#)

CEEO's [website](#).

Reports to law enforcement can be made to UNM Police Department at (505) 277-2241

## Copyright Issues:

All materials in this course fall under copyright laws and should not be downloaded, distributed, or used by students for any purpose outside this course.

[The UNM Copyright Guide](#) has additional helpful information on this topic.

## Accessibility:

The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodations of their disabilities.

UNM is committed to providing equitable access to learning opportunities for students with documented disabilities. As your instructor, it is my objective to facilitate an inclusive classroom setting, in which students have full access and opportunity to participate. To engage in a confidential conversation about the process for requesting reasonable accommodations for this class and/or program, please contact the [UNM Accessibility Resource Center](#) in 2021 Mesa Vista Hall at 505-277-3506 or at [arcsrvs@unm.edu](mailto:arcsrvs@unm.edu). Information about your disability is confidential.

- [Microsoft's Accessibility statement](#)
- [Canvas's Accessibility statement](#)

## Academic Misconduct:

Cheating and plagiarism (academic dishonesty) are often driven by lack of time, desperation, or lack of knowledge about how to identify a source. Communicate with me and ask for help, even at the last minute, rather than risking your academic career by committing academic dishonesty. Academic dishonesty involves claiming that work created by another source is your own original work. It is a [Student Code of Conduct](#) violation that can lead to a disciplinary procedure. When you use a resource in work submitted for this class, document how you used it and distinguish clearly between your original work and the material taken from the resource. *This includes the use of material generated by any AI source.*

Please see my separate statement on the use of AI-generated materials in our course work, posted in the Welcome Module on Canvas.

You should be familiar with UNM's [Policy on Academic Dishonesty](#) and the [Student Code of Conduct](#) which outline academic misconduct defined as plagiarism, cheating, fabrication, or facilitating any such act.

## **Drop Policy:**

If you wish to drop this course, it is your right (and your responsibility) to do so. If you are having trouble with the course, or have other issues going on in your life that are affecting your course performance and are considering dropping the course, please be in touch with me (your instructor) so that I can try to help you stay in the course (if that is what you want to do). If you know you need to drop the course but are having difficulty doing so, please let me know this and I will help you drop the course. Please see the section below ("Important Semester Dates") for the relevant dates in our semester by which drops need to be processed.

UNM Policies: This course falls under all UNM policies for last day to drop courses, etc. (These dates are listed below.) Please see <http://registrar.unm.edu> or the UNM Course Catalog for information on UNM services and policies. Please see the UNM academic calendar for course dates, the last day to drop courses without penalty, and for financial disenrollment dates.

## **Important Semester Dates:**

29 August: Last date to add sections, change grade mode, or change credit hours on LoboWeb. Last day to petition for in-state tuition classification (continuing students).

5 September: Last day to drop without "W" grade and 100% tuition refund on LoboWeb. Last day to add sections and/or change credit hours with form, \$10 per transaction. After this date, it is \$75 per transaction. Census/official reporting date.

7 November: Last day to drop on LoboWeb without dean's permission.

5 December: Last day to change grade mode with form. Last day to add sections and/or change credit hours with form, \$75 fee per transaction. Last day to drop with dean's permission and form.

18 December: Last day to report removal of incomplete.

## **UNM RESOURCES**

Connecting to Campus and Finding Support: UNM has many resources and centers to help you thrive, including [opportunities to get involved in campus life](#), [research experiences](#), [mental health resources](#), [academic support such as tutoring](#), [resource centers](#) for people like you, free food at [Lobo Food Pantry](#), [jobs on campus](#) and [financial capability](#) support. Your advisor, staff at the [resource centers](#) and [Dean of Students](#), and I can help you find the right opportunities for you.

Here are a few specific resources that many students have found useful:

[CAPS Tutoring Services](#) is a free-of-charge educational assistance program available to UNM students enrolled in classes. Online services include the Online Writing Lab, Chatting with or asking a question of a Tutor.

[UNM Libraries](#) offers a wide range of resources and services to help with your academic and research needs.

[Student Health & Counseling \(SHAC\) Online Services](#) supports the wellbeing of students through access to the highest quality health care, education and advocacy. Timely interventions for acute mental health and medical problems increase the likelihood that students will complete their educational goals.

[The Accessibility Resource Center](#) (ARC) recognizes individuals with disabilities as integral members of a diverse community and is committed to the provision of comprehensive resources to the University community (faculty, staff, and students) in order to create equitable, inclusive, and practicable learning environments.

### **For Military Connected Students:**

There are resources on campus designed to help you succeed. You can approach any faculty or staff for help with any issues you may encounter. Many faculty and staff have completed the GREEN ZONE training to learn about the unique challenges facing military-connected students. If you feel that you need help beyond what faculty and/or staff can give you, please reach out to the Veterans Resource Center on campus at 505-277-3181, or by email at [vrc@unm.edu](mailto:vrc@unm.edu).

### **Assignments and Points Breakdown:**

Each substantive module (Modules 2-7) is worth 100 points:

- 25 points for discussion board (15 for initial post, 5 each for two substantive responses).
- 50 for response assignment.
- 25 for quiz.

Modules 1 and 8 are worth 50 points each:

- Module 1: 25 points for syllabus quiz, 25 points for self-intro
  - Module 8: 25 points for self-assessments, 25 points for discussion board sharing final presentation (15 for sharing, 10 for responding to others, give extra credit for more substantive responses).
- = 700 points for modules

Midterm/Final project

-- midterm assignment: 100 points

-- final project: 200 points

Total: 1000 points

## GNDR 2110 Course Schedule:

Welcome Module:

Week 1:

READINGS: Syllabus, course calendar, and assignment guidelines

VIDEO: Welcome video, and “how to navigate this course” video

ASSIGNMENT: Send a message to your instructor to say hello and/or fill me in on anything you’d like me to know in order to help you succeed this semester.

QUIZ: Syllabus quiz

DISCUSSION: Post your brief introduction (text, photo, audio, and/or video) on the discussion board. If you’d like, share your pronouns and your preferred name.

## Module 1: Sex, Gender, Difference, and Intersectionality

Weeks 2-3:

READINGS: *Gender through the Prism of Difference* (GTPD), Introduction and all articles in Part I.

VIDEO: Module 1 Video

ASSIGNMENT: Letter on intersectionality, see assignment description.

QUIZ: Reading quiz, Module 1

DISCUSSION: Discussion board post (see prompt) and responses. Post due SEPT 3, three responses by SEPT 5.

## Module 2: Bodies/Sexualities and Desires

Week 3-4:

READINGS: GTPD, Part II: required, articles by Westbrook & Schilt, Davis, Lucal, and Glenn; optional: article by Mirza; Part III: required, articles by Pyke, Ward, Carrillo & Fontdevila, and Liddiard; optional: article by Ray & Rosow.

VIDEO: Module 2 Video

ASSIGNMENT: Visual notetaking assignment, see assignment description.

QUIZ: Reading quiz, Module 2

DISCUSSION: Discussion board post (see prompt) and responses. Post due SEPT 17, three responses by SEPT 19.

### Module 3: Identities

Weeks 5-6:

READINGS: GTPD, all articles in Part IV

VIDEO: Module 3 Video

ASSIGNMENT: Multi-modal response assignment, see assignment description.

QUIZ: Reading quiz, Module 3

DISCUSSION: Discussion board post (see prompt) and responses. Post due OCT 1, three responses by OCT 3.

### Module 4: Families/Labor

Weeks 7-8:

[FALL BREAK OCT 9-10]

READINGS: GTPD, Part V, required: articles by Hill Collins, Udel, Espinoza, Coontz, and Edin, optional: articles by Messner & Bozada-Deas, Civettini, and Estradad & Hondagneu-Sotelo; Part VI, required: articles by Williams, Denissen & Saguy, Wingfield, and Nawyn & Gjokaj; optional: articles by Kang and Glauber.

VIDEO: Module 4 Video

ASSIGNMENT: Work on your midterm assignment. See assignment description on Canvas. [No response assignment due for Module 4.]

QUIZ: Reading quiz, Module 4

DISCUSSION: Discussion board optional this week due to Spring Break. Extra credit points will be awarded, on the same scale usually used for grading, for responses posted to the prompt by OCT 17.



## Module 5: Education and Schools/Violence

Weeks 9-10:

### MIDTERM ASSIGNMENT DUE OCT 20

READINGS: GTPD, Part VII, all articles, and Part VIII, required: articles by Menjívar, Rios, and Bubar & Thurman, optional: article by Sokoloff & Pearce.

VIDEO: Module 5 Video

ASSIGNMENT: Choose to do reflective journal, visual notetaking, or multimodal response assignment. Use the previously posted assignment guidelines.

QUIZ: Reading quiz, Module 5

DISCUSSION: Discussion board post (see prompt) and responses. Post due OCT 29, three responses by OCT 31.

## Module 6: Change and Politics

Weeks 11-12:

READINGS: GTPD, all articles in Part IX.

VIDEO: Module 6 Video

ASSIGNMENT: Choose to do reflective journal, visual notetaking, or multimodal response assignment. Use the previously posted assignment guidelines.

QUIZ: Reading quiz, Module 6

DISCUSSION: Discussion board post (see prompt) and responses. Post due NOV 12, three responses by NOV 14.

## Module 7: Selections from Nonbinary (available in Canvas)

Weeks 13-14:

READINGS: Selected readings from Nonbinary (will be available on Canvas)

ASSIGNMENT: Reflective Journal response on Nonbinary

QUIZ: Reading Quiz over selections from Nonbinary

DISCUSSION: You will be placed in a peer review group of [3-4] students and you all will help each other with feedback and suggestions for your final projects. You will receive the regular discussion points for participating in this process.

## Module 8: Wrap Up and Farewell

### Week 15:

ASSIGNMENT: Self-assessment, can be in the form of a reflective journal, multimodal Response, or something else you'd like to do with instructor's permission. What have you learned in this class this term? Has it changed your views or thinking in any way? What's your biggest takeaway from the course?

DISCUSSION: Post a draft of your final project (25 points); reply with constructive feedback to up to five peers not in your peer review group (5 points each).

### Week 16:

FINAL ASSIGNMENT DUE!

Have a wonderful break!

## **GNDR 2110: Introduction to Women, Gender, and Sexuality Studies**

### **Assignment: Final Project**

#### **GNDR 2110 Final Project Description**

This assignment is your final project for GNDR 2110. Your assignment is to create an “online learning resource” that you design to help educate others about a social or political issue, problem, or concept related to material we've covered in class that you think is important. Examples of online learning resources include web comics, infographics, videos/animated presentations, zines, workbooks, and other digitally-oriented learning resources. You may also do this project as a manifesto-style project that is more about advocating for a particular political issue/cause/position. A manifesto could be mostly text, video/audio and text, text and images, or pretty much any combination of media that you can imagine. While most projects will include text, this is not a traditional final paper/research assignment; please feel free to be creative in what you dream up and how you execute your vision.

The main questions that I will be asking myself when assessing these project are: 1) what is the cause/issue/problem/position that this project is telling me about and is that clear; 2) what could a reader/viewer learn from viewing this project; 3) did the author do a good job in educating or explaining their cause/issue to their viewers/readers; 4) has the author made the connection between the class and the project clear?

If the main part of your project is not text-based then I ask that you write up a 250-500 word analysis of your project, explaining the cause/issue/problem/concept that you have chosen, its relevance to the course, and why you chose this issue to work on in particular. If you are passionate about this topic (and I hope you choose something that you are passionate about), why?

I am not going to specify a page length here as most of your project will not be text-dominant, I imagine. I'm happy to answer questions about this issue and any others as you work on your project. If you do have any questions about your project, please consult the rubric that I've linked below and then if you still need some answers please consult with me (Professor Higgins). And remember, the earlier you can contact me with your questions, the better!

#### **Discussion of Final Project Assignment and Its Relevance to Skill #3 and Component Skills:**

I am addressing Skill #3 (Personal and Social Responsibility) here with respect to the Final Project assignment for GNDR 2110. This assignment is the culmination of all of the work we do in the course. I use the course structure built into the modules in order to scaffold the assignments. Thus, in the second half of the course, on the discussion boards, students are asked to brainstorm ideas relevant to the topical issues from that module that they could potentially use toward their final projects. Since the discussion boards ask that students respond to several peers in each module, they therefore have a ready-made outlet to begin working toward their final project in collaboration with their peers as we move toward the end of the term.

The “personal and social responsibility” skill is at the heart of the entire course that I teach, embedded in all of the readings and assignments, as it is the backbone of what the WGSS program stands for.

The Final Project assignment addresses these three of the component skills for Skill #3:

**Intercultural reasoning and intercultural competence** Explain a range of personal, social, cultural, or social justice issues as they relate to one’s own or others’ perspectives.

\*This component skill is the essential heart of the entire project (really, the entire course). Students have been asked to work on this skill through the entire course, in each module that covers a range of relevant material related to intersectional feminisms as well as gender and sexuality studies. These include “Sex, Gender, Difference, and Intersectionality,” “Bodies, Sexualities, and Desires,” “Identities,” “Families and Labor,” “Education and Schools/ Violence,” and “Change and Politics.”

This project asks the students to choose a particular issue out of the wide range of issues we’ve covered all term and to construct an online learning resource specifically on that topic. It is meant to be a resource that is essentially educational and/or one of advocacy. Thus the success of the project depends on the student’s ability to “explain [this issue]” as it relates to “[their] own or others’ perspectives.”

### **Ethical Reasoning**

Describe shared ethical responsibilities or moral norms among members of a group. Explain ethical issues or propose solutions based on ethical perspectives or theories.

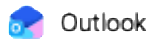
Collaboration skills, teamwork and value systems

\*Questions of ethics and ethical reasoning are inherent in the subject matter of the entire course, which asks students to consider from a range of perspectives the ethical nature of how our social world has dealt with those who have been “minoritized” in one way or another (or multiple ways) in the past and/or present. The assignment to create an online learning resource asks that students successfully “explain an ethical issue” and “propose a solution based on ethical perspective or theories.” As well, they are asked to collaborate with peers throughout the term via the discussion boards. This culminates in the second to last discussion board, where they are put into smaller, peer-review groups where they share with each other drafts of their final projects and then offer feedback to each other.

**Demonstrate effective and ethical collaboration in support of meeting identified group goals.** (Accountability is implied with “ethical.”)

Civic discourse, civic knowledge and engagement – local and global Explain and support one’s own position on specific local or global issues while recognizing that there may be multiple valid perspectives.

The students are asked to “explain and support one’s own position on specific local or global issues while recognizing that there may be multiple valid perspective” throughout the course via the discussions they have with each other, in response to prompts that are on issues derived from the readings (see the list of module topics above). Thus, they practice this skill all semester. It, again, culminates in the final project. Given the issues we cover (particularly their often-times fraught nature), it is an essential part of the course that students be able to explain and support their own positions while also acknowledging other perspective as potentially valid. The success of the final project, and its basis in education and/or advocacy, as well, rests on these essential skills in terms of its ability to reach an audience.



---

**GNDR 2110 requires no extra financial support from the college**

---

**From** Keith Hunley <khunley@unm.edu>

**Date** Wed 11/5/2025 8:44 AM

**To** Sarah Davis-Secord <scds@unm.edu>

Hi Sarah,

The dean's office confirms that the WGSS proposal to convert GNDR 2110 to a GenEd course requires no extra financial support above and beyond the basic support for the department's teaching resources.

Keith

---

Keith Hunley

Associate Dean for Social Sciences & Interdisciplinary Departments, College of Arts and Sciences

Professor of Anthropology

University of New Mexico



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5793                              |
| Institution        | UNM-MAIN                          |
| Applicant(s)       | mraine@unm.edu, pcheek@unm.edu    |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-01-22 03:32 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Pamela Cheek

---

### Chief Academic Officer Email

pcheek@unm.edu

---

### Registrar Name

Michael Raine

---

### Registrar Email

mraine@unm.edu

---

### Course's Academic Department

Architecture & Planning

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

LARC

---

### Number

1110

---

### Title

Introduction to Landscape Architecture: 21st Century Superhero

---

### Number of credits

3

---

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

No

---

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

No



## Co-requisite Course

---

### Prefix

NA

---

### Number

NA

---

### Title

NA

## New Mexico Common Course Information

---

### Prefix

LARC

---

### Number

1110

---

### Title

Introduction to Landscape Architecture: 21st Century Superhero

## A. Content Area and Essential Skills

---

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

Creative & Fine Arts

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

1. Examine the relationship among environmental, socio-cultural, political, and economic systems as they interact with and affect the sustainability of the natural and human worlds.
2. Describe shared ethical responsibilities or moral norms among members of a group. Explain ethical issues or propose solutions based on ethical perspectives or theories.
3. Identify and communicate in various genres and mediums (oral, written, and digital) using strategies appropriate for the rhetorical situations (i.e., attending to audience, purpose, and context).
4. Apply strategies such as reading for main points; seeking key arguments, counterarguments, rebuttals; locating supportive documentation for arguments; reading with a specific stakeholder lens; applying a theoretical lens (e.g. cultural, political, economic) to understand and evaluate messages in terms of the rhetorical situation (audience, purpose, and context).
5. Evaluate the authority of sources in their own arguments and those of others; distinguish among supported claims, unsupported claims, facts, inferences, and opinions. In arguments, integrate support for their own claims with information from sources that are used and cited ethically and appropriately (using Chicago Style).
6. Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation. Explain and support one's own position on specific local or global issues while recognizing that there may be multiple valid perspectives.
7. Explain a range of personal, social, cultural, or social justice issues as they relate to one's own or others' perspectives.
8. Delineate a problem or question. Students state problem/question appropriate to the context.

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

NA

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Communication: NMHED essential skill students learn in LARC1110. Students in LARC1110 Intro to Landscape Architecture: 21st Century Superhero develop communication component skills (genre and medium awareness, the application of mediums, and versatility in applying them; strategies for understanding and

evaluating messages; and the evaluation

and production of arguments) by learning basic design drawing skills – diagrams, sketching, and layout -- and comparing these methods of communication with written methods learned by writing both short and longer papers. Students also present visually in class on case studies of landscapes.

LARC1110 requires students to both draw and write, giving them experience in genre/medium awareness and in selecting which medium to apply to a particular communication project. Students become versatile in each medium through practice in class and extensive comments from faculty on each piece of writing and each drawing. Faculty write comments on response papers and essays in Canvas. Comments on drawings are in person in class. In the in-class sessions where drawings are discussed, faculty model strategies for understanding and evaluating messages conveyed by student drawings and drawings presented in lectures. Students then comment on each other's drawings using those strategies. In the individual feedback on papers, faculty evaluate the arguments produced by the students. This models for the students a method, which they employ to evaluate source arguments while writing research papers. Students write short papers and one longer paper about the Biography of a Landscape during the semester. Each paper requires research in both drawn and written documentation of the landscapes. Students learn to evaluate the difference among these media and what each genre offers.

---

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Critical Thinking: Students in LARC1110 Intro to Landscape Architecture develop critical thinking skills by reading and analyzing texts and lectures about landscape architecture and then writing about the people, movements, and landscapes they study. The component skills that build critical thinking skills are problem setting, evidence acquisition, evidence evaluation and reasoning or conclusion. This course builds these skills in the following manner.

Problem setting is crucial to the comprehension of design. As an introductory course, students are exposed to a wide variety of design solutions to various problems through lectures and readings, learning the vocabulary of design. They are required to analyze through writing about readings and lectures what problems are solved by various aspect of specific designs presented. The final project requires students to put together a STANCE on landscape architecture, during which students analyze how design is problem solving, begun by recognizing the problem set or posed by the context and the program of the design -- the crucial first step to any solution. For response papers about readings and for longer presentations, the student acquires evidence by researching projects in both online and book sources. Those sources provide such evidence as names and firms of landscape architects, archives of other projects those designers have produced, and critical book chapters, papers, and articles about the projects. The student then evaluates this evidence to argue for the suitability or lack of suitability of the design method or product. Such arguments detail the built forms and the processes, for instance: water collection, habitat creation, usability by humans and non-humans. These essays require students to develop a line of reasoning articulated through their writing.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

Intro to Landscape Architecture: 21st Century Superhero addresses Personal and Social Responsibility as an NMHED essential skill through the component skills of a) sustainability and the natural and human worlds and b) civic discourse including civic knowledge and engagement – local and global. Other components may occur in readings or lectures but are not addressed directly in this narrative.

The course unit "Fire and Water: Climate Change: Sea level rise, floods fires, indigenous technologies and

precedents” immerses students in values of human actions towards sustainability in the human world and develops skills of civic discourse with readings, lectures, short response papers about the values of sustainability in the natural world. The unit on “Civic Space” asks students to research, understand, and represent the influence of the practice of landscape architecture in civic spaces providing students with civic knowledge about cultures inside and outside the US. Students express their understanding through the “case study assignment” employing representation of different styles of global urban and rural spaces.

Both of these component skills – sustainability and civic knowledge – are illustrated by the attached case study assignment. The project requires students to develop a case study of a project from a list of international and US based firms. The case study requires evaluation of seven questions among them:

How does the project address issues of environmental sustainability?

Does the project consider clients other than humans?

Does the project address social justice issues?

How does the project make the world (in the site’s context) a better place?

In answering these questions and presenting their research in a slide show for the class, students engage directly with evaluating these component skills while employing communication and media-based skills.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](#)

assessment.unm.edu

# Application History

| Type          | username       | Text                                                        | Timestamp                          |
|---------------|----------------|-------------------------------------------------------------|------------------------------------|
| Submittal     | pcheek@unm.edu | Submitted by pcheek@unm.edu                                 | 2026-01-22 03:32 PM (US /Mountain) |
| Authorization | pcheek@unm.edu | pcheek@unm.edu has authorized the application for submittal | 2026-01-22 03:32 PM (US /Mountain) |
| Authorization | mraine@unm.edu | mraine@unm.edu has authorized the application for submittal | 2026-01-22 01:18 PM (US /Mountain) |
| Authorization | mraine@unm.edu | mraine@unm.edu has added pcheek@unm.edu to the application  | 2026-01-22 01:17 PM (US /Mountain) |
| Created       | mraine@unm.edu | Application started by mraine@unm.edu                       | 2026-01-22 01:12 PM (US /Mountain) |

## Combined UNM General Education Form C and

### New Mexico Curriculum & Articulation Committee (NMCAC) Certification Request

*The information provided on this form will enable review of the proposed general education course by both the UNM Faculty Senate Curricula Committee (see Faculty Handbook A61.2) and submission of the proposed course by the UNM Registrar for review by the New Mexico Curriculum and Articulation Committee (NMCAC). Please use the information below to develop a word document attachment to a Form C, which will then be used by UNM Registrar to initiate review with NMCAC and with FSCC.*

#### 1. Contact Information

|                                                    |  |
|----------------------------------------------------|--|
| Name: Catherine Page Harris                        |  |
| Title: Chair, Department of Landscape Architecture |  |
| Phone: 505 379 0772                                |  |
| Email: cphunm@unm.edu                              |  |

#### 2. Institutional Course Information

|                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Prefix: LARC                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                           |
| Number: 1110                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                           |
| Title: Intro to Landscape Architecture                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                           |
| Number of credits: 3                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                           |
| Was this course previously part of the Gen Ed Core Curriculum? NO                                                                                                                                                                                                                                                                   |                                                                                                                                                                                           |
| General Education Area (select <u>one</u> )<br>See <a href="http://gened.unm.edu">gened.unm.edu</a> and<br><a href="http://assessment.unm.edu/assessment-types/gened-assessment/essential-skills.html">http://assessment.unm.edu/assessment-types/gened-assessment/essential-skills.html</a> for information<br>about content areas | 1. Communication<br>2. Mathematics and Statistics<br>3. Physical and Natural Sciences<br>4. Social and Behavioral Sciences<br>5. Humanities<br>6. Arts and Design X<br>7. Second Language |

### **3. Student Learning Outcomes**

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

#### **Landscape Architecture (LARC)**

#### **LARC 1110. Introduction to Landscape Architecture**

##### **Course Description:**

**Landscape Architecture is a versatile field with equally versatile practitioners. Designers of the outside spaces where humans interact with each other and with nature, we bring together a wide range of tools and experiences to solve the unique challenges of helping to create vibrant spaces. In this course you will develop an understanding of why today, more than ever, the practice of Landscape Architecture plays a valuable and critical role in how humans understand, inhabit and help shape the world around us.**

##### **Student Learning Outcomes**

**Students will be able to:**

- 1. Examine the relationship among environmental, socio-cultural, political, and economic systems as they interact with and affect the sustainability of the natural and human worlds.**
- 2. Describe shared ethical responsibilities or moral norms among members of a group. Explain ethical issues or propose solutions based on ethical perspectives or theories.**
- 3. Identify and communicate in various genres and mediums (oral, written, and digital) using strategies appropriate for the rhetorical situations (i.e., attending to audience, purpose, and context).**
- 4. Apply strategies such as reading for main points; seeking key arguments, counterarguments, rebuttals; locating supportive documentation for arguments; reading with a specific stakeholder lens; applying a theoretical lens (e.g. cultural, political, economic) to understand and evaluate messages in terms of the rhetorical situation (audience, purpose, and context).**
- 5. Evaluate the authority of sources in their own arguments and those of others; distinguish among supported claims, unsupported claims, facts, inferences, and opinions. In arguments, integrate support for their own claims with information from sources that are used and cited ethically and appropriately (using Chicago Style).**

**6. Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation. Explain and support one's own position on specific local or global issues while recognizing that there may be multiple valid perspectives.**

**7. Explain a range of personal, social, cultural, or social justice issues as they relate to one's own or others' perspectives.**

**8. Delineate a problem or question. Students state problem/question appropriate to the context.**

**a. Three Essential Skills Narratives (one for each essential skill assigned to the gen ed area)**

### **Narrative 1 on Essential Skill (Critical Thinking) and Component Skills**

Critical Thinking: Students in LARC1110 Intro to Landscape Architecture develop critical thinking skills by reading and analyzing texts and lectures about landscape architecture and then writing about the people, movements, and landscapes they study. The component skills that build critical thinking skills are problem setting, evidence acquisition, evidence evaluation and reasoning or conclusion. This course builds these skills in the following manner.

**Problem setting** is crucial to the comprehension of design. As an introductory course, students are exposed to a wide variety of design solutions to various problems through lectures and readings, learning the vocabulary of design. They are required to analyze through writing about readings and lectures what problems are solved by various aspect of specific designs presented. The final project requires students to put together a **STANCE** on landscape architecture, during which students analyze how design is problem solving, begun by recognizing the **problem set or posed** by the context and the program of the design -- the crucial first step to any solution. For response papers about readings and for longer presentations, the student **acquires evidence** by researching projects in both online and book sources. Those sources provide such evidence as names and firms of landscape architects, archives of other projects those designers have produced, and critical book chapters, papers, and articles about the projects. The student then **evaluates this evidence** to argue for the suitability or lack of suitability of the design method or product. Such arguments detail the built forms and the processes, for instance: water collection, habitat creation, usability by humans and non-humans. These essays require students to **develop a line of reasoning** articulated through their writing.

### **Narrative 2 on Essential Skill (Communications) and Component Skills (<300 words):**

Communication: NMHED essential skill students learn in LARC1110. Students in LARC1110 Intro to Landscape Architecture: 21<sup>st</sup> Century Superhero develop communication component skills (genre and medium awareness, the application of mediums, and versatility in applying them; strategies for understanding and evaluating messages; and the evaluation



and production of arguments) by learning basic design drawing skills – diagrams, sketching, and layout -- and comparing these methods of communication with written methods learned by writing both short and longer papers. Students also present visually in class on case studies of landscapes.

LARC1110 requires students to both draw and write, giving them experience in **genre/medium awareness** and in selecting which medium to apply to a particular communication project. Students **become versatile** in each medium through practice in class and extensive comments from faculty on each piece of writing and each drawing. Faculty write comments on response papers and essays in Canvas. Comments on drawings are in person in class. In the in-class sessions where drawings are discussed, faculty model **strategies for understanding and evaluating messages** conveyed by student drawings and drawings presented in lectures. Students then comment on each other's drawings using those strategies. In the individual feedback on papers, faculty **evaluate the arguments** produced by the students. This models for the students a method, which they employ to **evaluate source arguments** while writing research papers. Students write short papers and one longer paper about the Biography of a Landscape during the semester. Each paper requires research in both drawn and written documentation of the landscapes. Students learn to **evaluate the difference among these media and what each genre offers**.

Narrative 3 on Essential Skill Personal and Social Responsibility and Component Skills (<300 words):

Intro to Landscape Architecture: 21<sup>st</sup> Century Superhero addresses Personal and Social Responsibility as an NMHED essential skill through the component skills of a) sustainability and the natural and human worlds and b) civic discourse including civic knowledge and engagement – local and global. Other components may occur in readings or lectures but are not addressed directly in this narrative.

The course unit “Fire and Water: Climate Change: Sea level rise, floods fires, indigenous technologies and precedents” immerses students in values of human actions towards **sustainability in the human world and develops skills of civic discourse** with readings, lectures, short response papers about the values of **sustainability in the natural world**. The unit on “Civic Space” asks students to research, understand, and represent the influence of the practice of landscape architecture in civic spaces providing students with **civic knowledge** about cultures inside and outside the US. Students express their understanding through the “case study assignment” employing representation of different styles of global urban and rural spaces.

Both of these component skills – **sustainability and civic knowledge** – are illustrated by the attached case study assignment. The project requires students to develop a case study of a project from a list of international and US based firms. The case study requires evaluation of seven questions among them:

How does the project address issues of environmental sustainability?

Does the project consider clients other than humans?

Does the project address social justice issues?

How does the project make the world (in the site's context) a better place?

In answering these questions and presenting their research in a slide show for the class, students engage directly with evaluating these component skills while employing communication and media-based skills.

---

## **b. Sample Assignment**

LA 1411 | FALL 2023 | Sample Assignment

Intro to Landscape Architecture | Professor:

| email:

Office Hours:

### **Final Project: Case Study**

Due: \_\_\_\_ at \_\_\_\_ AM via Canvas Upload

Format: 11"X17" pdf (InDesign Template Provided)

Project introduction:

Researching seminal projects of landscape architects around the world is key in understanding the full breadth of landscape architecture, the theoretical stance of the designer and/or firm, and the multiple contemporary issues that the projects address.

As a class, we will begin to build a shared collection of designed landscapes around the world. You are asked to become explorers, researchers, and analysts. You will start by choosing a project from the list of firms below. As you begin your research, look to answer the question prompts as a guide, and add your own three questions to include in the project. You will share your critical assessment of the project with your peers. Be sure to review the InDesign template on Canvas before you get started.

### **Student Learning Outcomes:**

*The student...*

*...demonstrates the ability to examine the relationship among environmental, social-cultural, political, and economic systems as they interact with and affect the sustainability of the natural and human worlds through a designed landscape.*

*...demonstrates the ability to support one's own position on a specific local or global issue while recognizing that there may be multiple valid perspectives.*

*...demonstrates the ability to develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation of a contemporary public landscape project.*

*...demonstrates the ability to communicate findings, analysis and one's own stance in oral, written and digital mediums.*

**Projects will be evaluated on the SLOs above and the following criteria:**

1. The project is complete:
  - [ ]. Cover
  - [ ]. Introduction to the project
  - [ ]. Project drawing sets and images with explanatory text
  - [ ]. Project critique through questions
  - [ ]. Closing statement
  - [ ]. Bibliography + Image Credits

- The project uses proper and thorough citations for photographs, websites, books, journals, films, etc.

#### List of Landscape Architecture Firms:

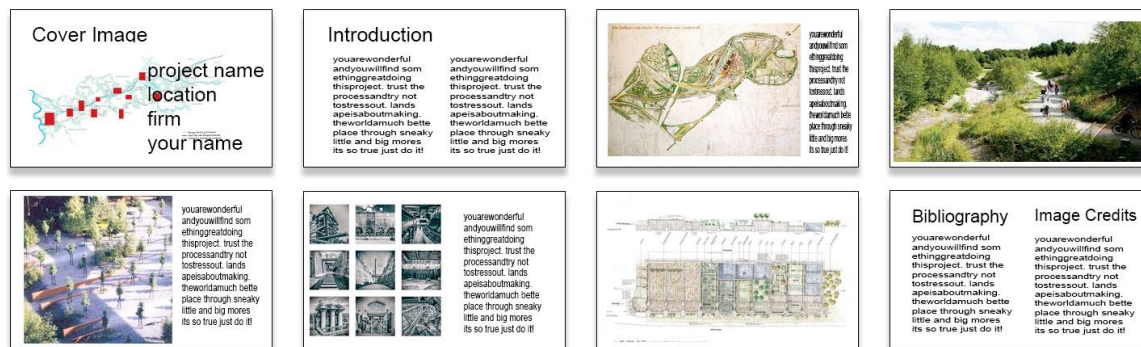
|                           |                                          |
|---------------------------|------------------------------------------|
| Agence Ter                | SINAI                                    |
| Altelier Scale            | Scape                                    |
| Andreas Kipar (LAND)      | Stig L. Andersson (SLA)                  |
| Aniket Bhagwat            | STOSS                                    |
| Aspect Studios            | Ten Eyke                                 |
| Balmori Associates        | Topotek 1                                |
| D.I.R.T                   | Turenscape                               |
| Field Operations          | Vogt Landscape                           |
| Gilles Clement            | West 8                                   |
| Gustafson Porter + Bowman | Yael Bar-Maor                            |
| Hill Works                | Snøhetta                                 |
| Hood Design Studio        | Sasaki                                   |
| Karres + Brans            | OLIN                                     |
| Latz + Partner            | Michael Van Valkenburg Associates (MVVA) |
| Leonard Grosch (LOIDL)    | Martha Schwartz Partners                 |
| Martí Franch (EMF)        | MASS Design Group                        |

List of questions to inform your research. Please add 3 of your own to this list:

- How does the project address issues of environmental sustainability?
- Does the project consider clients other than humans?
- Does the project address social justice issues?
- How is the project engaged with and by what communities in different seasons?
- What are the successes of the project?
- What are the failures?
- How does the project make the world (in the site's context) a better place?

Please download and review the InDesign Template from Canvas.

Sneak peak:



Have fun on your adventure!



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5663                              |
| Institution        | NMMI                              |
| Applicant(s)       | yang@nmmi.edu                     |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-01-21 07:51 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Orlando Griego

### Chief Academic Officer Email

ogriego@nmmi.edu

### Registrar Name

Nekeya Bertrand

### Registrar Email

bertrand@nmmi.edu

### Course's Academic Department

Science department

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

PHSC

### Number

1130L

### Title

FORENSIC SCIENCE II lab

### Number of credits

0

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

No

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

Yes

## Co-requisite Course

---

### Prefix

PHSC

---

### Number

1130

---

### Title

FORENSIC SCIENCE II

## New Mexico Common Course Information

---

### Prefix

PHSC

---

### Number

1130L

---

### Title

FORENSIC SCIENCE II lab

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

---

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

Student Learning Outcomes

A successful student will learn basic skills in scientific methodology, proper laboratory safety, and proper measuring techniques & equipment. A successful student will have beginner's skill in recognition, collection and preservation of physical evidence, as well as techniques on testing physical evidence.

---

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

Student Learning Outcomes

A successful student will learn basic skills in scientific methodology, proper laboratory safety, and proper measuring techniques & equipment. A successful student will have beginner's skill in recognition, collection and preservation of physical evidence, as well as techniques on testing physical evidence.

## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Learning and applying the scientific method in the Forensic Science II Lab (PHSC 1130L) addresses all components of critical thinking, including problem setting, evidence acquisition, evidence evaluation, and reasoning and conclusion. Through a series of structured laboratory exercises and crime scene simulations, cadets encounter scenarios in which some investigative problems are clearly defined while others require independent recognition and assessment of relevant issues. Evidence collection techniques are introduced, practiced, and refined with strong emphasis on proper documentation, chain of custody, and preservation of all available data. Evaluation of evidence is stressed through careful measurement, analysis, and interpretation of laboratory results while avoiding bias. Conclusions and supporting reasoning develop through individual analysis, laboratory reports, and group discussion of findings.

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

The proposed course, Forensic Science II Lab (PHSC 1130L), develops quantitative reasoning through analysis of experimental data generated during crime scene and forensic laboratory exercises. Cadets construct and apply quantitative models to support investigative conclusions using measurements from scene documentation, bloodstain pattern analysis, footprint and toolmark comparisons, firearm trajectory evaluation, and chemical and toxicology testing. Laboratory reports require cadets to organize, present, and interpret numerical data, while comparing findings with established forensic standards and reference literature. Quantitative arguments are evaluated through peer critique and instructor feedback, emphasizing the use of complete data sets to avoid bias. These practices reinforce accurate model development and evidence-based forensic interpretation.

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

Personal and social responsibility in the Forensic Science II Lab (PHSC 1130L) is developed through continuous emphasis on ethical practice and professional collaboration within a laboratory and crime scene environment. Cadets are instructed in the ethical responsibilities of evidence handling, documentation, and chain of custody, reinforcing accountability, accuracy, and respect for the legal system. Laboratory exercises and crime scene simulations highlight the real-world consequences of forensic decisions on victims, families, and the community. Team-based processing activities, practical examinations, and case analyses require cadets to work collaboratively, evaluate diverse perspectives, and uphold shared professional values. Ongoing discussion reinforces the responsibility of forensic practitioners to apply science with integrity, objectivity, and public trust.



## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.nmmi.edu/wp-content/uploads/2022/11/ACADEMIC-ASSESSMENT-PLAN.pdf)

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

# Application History

| Type          | username      | Text                                                       | Timestamp                          |
|---------------|---------------|------------------------------------------------------------|------------------------------------|
| Submittal     | yang@nmmi.edu | Submitted by yang@nmmi.edu                                 | 2026-01-21 07:51 PM (US /Mountain) |
| Authorization | yang@nmmi.edu | yang@nmmi.edu has authorized the application for submittal | 2026-01-21 07:51 PM (US /Mountain) |
| Created       | yang@nmmi.edu | Application started by yang@nmmi.edu                       | 2026-01-07 02:11 PM (US /Mountain) |

## **FORENSIC SCIENCE II**

*Forensic Science PHSC 1130*

**Semester:** Spring

**Year:** 2026

**Course Number:** PHSC 1130

**Meeting Days, Times and Place:** M, W, F - 10:05 to 10:55, McClure 100

**Professor:** MAJ. BEAUNE VILLARAZA

**Email:** villaraza@nmmti.edu **Phone:** (575) 624-8195

### **Course Description:**

This course is designed to introduce students to recognition, documentation and collection of physical evidence in a practical environment. Course material will be presented in such a manner as to allow practical application of proper technique, limited analysis and presentation in the field. A laboratory component of the course will be conducted in concert.

### **General Scope of the Course:**

This course covers such topics as how to initially approach a crime scene; the importance of following proper procedure and protocol in searching, collecting, and packaging crime scene evidence; how to ensure the integrity and chain of evidence rules that will be acceptable in a court of law; how to identify and collect various forms of evidence ranging from biological fluids to weapons and firearms; and how to document a crime scene as well as explain different techniques for handling evidence.

**Prerequisite:** None

**Sequences:** None

**Co-requisite:** Forensic Science II Lab (PHSC 1130L)

### **Course Outcomes:**

A successful student will learn basic skills in scientific methodology, proper laboratory safety, and proper measuring techniques & equipment. A successful student will have beginner's skill in recognition, collection and preservation of physical evidence, as well as techniques on testing physical evidence.

### **Course Learning Objectives:**

By the completion of this course, the cadet will be able to:

- Demonstrate crime management techniques
- Locate relevant physical evidence at a crime scene based on crime scene type
- Demonstrate evidence documentation procedures including sketching, notetaking, and photography
- Identify appropriate processing techniques for physical evidence
- Apply appropriate field-based processing techniques to physical evidence

- Determine appropriate evidence collection procedures based on the crime scene characteristics, alleged offense, and evidence type
- Describe situations that threaten evidence admissibility in court
- Assess safety considerations of crime scenes for investigators and laboratory analysts
- Analyze ethical concerns for crime scene investigators, crime laboratories, and the role of forensic science within the criminal justice system as a whole

### Departmental outcomes

- A. Cadets will be able to demonstrate an understanding of core knowledge of the sciences.
- B. Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
- C. Cadets will be able to apply the scientific method to solve problems.
- D. Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
- E. Cadets will be able to acquire and synthesize scientific information from a variety of sources.

Cadets will be able to apply techniques and instrumentation to solve problems.

### Procedures and Classroom Rules:

- I report all absences.
- **No late work is accepted.**
- Make-up work is allowed only for excused absences. It is the student's responsibility to meet with me to schedule a make-up lab, homework or test.
- Follow Math and Science Electronics Policy. Cellular phones must be placed in a shoebox upon entry to the classroom. Use of electronics (laptop, iWatch, cellphone, taking pictures of the notes, etc.) are strictly prohibited and will result in the grade of "0" on the quiz/test.

### Texts:

NMMI Forensic Science Laboratory Manual by Villaraza ISBN-13 : 979-8272981318  
 Forensic Chemistry and Toxicology Methods of Analysis by Villaraza  
 ISBN-13 : 979-8646680533

### Grading Procedure:

Course grade will be calculated as

$$0.70[\text{sum of tests} + \text{final exam} + \text{homework} + \text{quizzes}] + 0.30[\text{lab average}]$$

|               |          |              |          |
|---------------|----------|--------------|----------|
| 100 %- 90.0 % | <b>A</b> | 89.9%- 80.0% | <b>B</b> |
| 79.9%-70.0%   | <b>C</b> | 69.9%- 60.0% | <b>D</b> |
| 59.9%-0%      | <b>F</b> |              |          |

**Final Exam Policy:**

A mandatory comprehensive final exam 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.

**Department/Division Policy on Academic Dishonesty:**

Any academic dishonesty case will be handled in accordance with the Academic Honor Review Procedure established by the Commandant. Cheating on exams, plagiarism and copying assignments are serious offenses at NMML and will not be tolerated. An explanation of what constitutes academic dishonesty is found in the Academic Skills Manual, NMML. A student guilty of academic dishonesty will be given an “F” for the course and the reasons for the failing grade will be submitted to the Commandant. It is expected on your honor that homework assignments will not be copied from the text or another’s work.

**Course Outline**

The topics may be changed with or without notice.

**Orientation – Jan. 12****Chapter 1 – Introduction to Forensic Science - Jan. 14, 16, 21**

- History and Development
- Organization of Crime Lab
- The Scientific Method
- Admissibility of Evidence in Court
- The Forensic Scientist

**Chapter 2 – Physical Evidence – Jan 23, 26, 28**

- Legal Aspects of Evidence
- Types of Evidence
- Purpose of Examining Physical Evidence

**Test 1 (Chapter 1 and 2) – Jan 30****Chapter 3 – Impression Evidence –Feb, 2, 4, 6**

- Collection Methods
- Individual and Class Characteristics
- Toolmarks
- Restoration of Tampered Serial Number
- Evidence Preservation

**Chapter 4 – Crime Scene Processing – Feb 9, 11, 13, 18, 20**

- Team Composition and Functions
- Procedure in Processing a Crime Scene
- CS Photography
- CS Sketching

Measuring Methods  
Types of Search

**Test 2 – (Chapter 3 and 4) – Feb 23**

Chapter 5 – Forensic Dactyloscopy –Feb 25, March 2. 4

History of Fingerprints  
Dogmatic Principle  
Types of Fingerprints/ Minutiae patterns  
Methods of Developing Latent prints and Taking of Standard Prints

Chapter 6 – Forensic Photography – March 6, 9, 11

Elements of Photography/ Exposure Triangle  
Photography in Crime Scene Investigation  
Procedure in Photographing Crime Scene  
Photographing Evidence  
Parts of the Camera and Controls

**Test 3 – Chapter 5 and 6 – March 13**

Chapter 7 – Death Investigation – March 23, 25, 27

Types of Death  
Autopsy  
Documenting Cadavers in the Crime Scene  
Types of Wounds  
Post-Mortem Changes  
Forensic Toxicology

Chapter 8 – Forensic Ballistics/ Firearms Identification – March 30, Apr 1, Apr 8

Types of Firearms  
Ammunition/ Bullet and Cartridge Comparisons  
Microscopic Analysis using Comparison Microscope

**Test 4 (Chapter 7 and 8) – April 10**

Chapter 9 – Forensic Chemistry – April 13, 15, 17

Dangerous Drugs  
Examination of Dangerous Drugs  
Explosives  
Gunshot Residues

Chapter 10 – Fire and Arson Investigation – April 20, 22, 24

Fire Triangle  
Phases of Fire  
Classes of Fire  
Fire Extinguishment Theory

Arson Investigation  
The Fire Scene  
Evidence Collection

**Test 5 (Chapter 9 and 10) – April 27**

Finals Review – April 29, May 1

**Finals – May 4– 6**

**Additional Activities**

- 2026 Online Spring Forensic Science Symposium  
Henry C. Lee Institute of Forensic Science, Univ. of New Haven
- Educational Tour at the Medical Investigator's Office (Albuquerque)
- Educational Tour at the Santa Fe Forensic Laboratory

**Assessment Statement.**

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.

## FORENSIC CRIME SCENE INVESTIGATION LAB

*Forensic Science Lab PHSC 1130L*

**Semester:** Spring **Year:** 2026

**Course Number:** PHSC 1130L

**Meeting Days, Times and Place:** Th 09:10 – 10:55, MC205

**Professor:** Maj. Beaune Villaraza

**Email:** villaraza@nmmt.edu

**Phone:** (575) 6248195

**Office hours & Location:**

|                           | Monday                        | Tuesday                       | Wednesday                     | Thursday                      | Friday                        |
|---------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| <b>0715-0810</b>          | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Commandant's<br>Time          | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 |
| <b>1st<br/>0815-0905</b>  | CHM 032<br>McClure 111        | CHM 032<br>McClure 111        | CHM 032<br>McClure 111        | CHM 032<br>McClure 111        | CHM 032<br>McClure 111        |
| <b>2nd<br/>0910-1000</b>  | PHSC 1130<br>McClure 111      | Tutoring Hours<br>McClure 100 | PHSC 1130<br>McClure 111      | PHSC 1130L<br>McClure 205     | PHSC 1130<br>McClure 111      |
| <b>3rd<br/>1005-1055</b>  | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | PHSC 1130L<br>McClure 205     | Tutoring Hours<br>McClure 100 |
| <b>4th<br/>1100- 1150</b> | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 |
| <b>Lunch<br/>1150</b>     | <b>Lunch<br/>1150</b>         | <b>Lunch<br/>1150</b>         | <b>Lunch<br/>1150</b>         | <b>Lunch<br/>1150</b>         | <b>Lunch<br/>1150</b>         |
| <b>5th<br/>1250- 1340</b> | CHEM 1215<br>McClure 116      | Tutoring Hours<br>McClure 100 | CHEM 1215<br>McClure 116      | CHEM 1215L<br>McClure 205     | CHEM 1215<br>McClure 116      |
| <b>6th<br/>1345-1435</b>  | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | CHEM 1215L<br>McClure 205     | Tutoring Hours<br>McClure 100 |
| <b>7th<br/>1440-1530</b>  | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | CHEM 1215L<br>McClure 205     | Tutoring Hours<br>McClure 100 |

**Course Description:**

Covers scientific procedure for processing a crime scene and recognizing scientific evidence. Forensic photography and collection of physical evidence are also examined. Specific skills studied include collection of fingerprints and footprints, toolmark evidence collection, blood spatter analysis, and forensic analysis of firearms.

**Prerequisite:** PHSC 1120 or any other 4 – unit lab science but not required.

**Co-requisite:** PHSC 1130

**Course Outcomes:**

A successful student will learn basic skills in scientific methodology, proper laboratory safety, and proper measuring techniques & equipment. A successful student will have beginner's skill in recognition, collection and preservation of physical evidence, as well as techniques on testing physical evidence.



**Departmental outcomes**

- A. Cadets will be able to demonstrate an understanding of core knowledge of the sciences.
  - B. Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
  - C. Cadets will be able to apply the scientific method to solve problems.
  - D. Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
  - E. Cadets will be able to acquire and synthesize scientific information from a variety of sources.
- Cadets will be able to apply techniques and instrumentation to solve problems.

**Procedures and Classroom Rules:**

- I report all absences.
- **No late work is accepted.**
- Make-up work is allowed only for excused absences. It is the student's responsibility to meet with me to schedule a make-up lab, homework or test.
- Follow Math and Science Electronics Policy. Cellular phones must be placed in a shoebox upon entry to the classroom. Use of electronics (laptop, iWatch, cellphone, taking pictures of the notes, etc.) are strictly prohibited and will result in the grade of "0" on the quiz/test.

**Text:**

NMMI Forensic Science Laboratory Manual by Villaraza ISBN-13 : 979-8272981318  
Forensic Chemistry and Toxicology Methods of Analysis by Villaraza  
ISBN-13 : 979-8646680533

**Grading Procedure:**

Course grade will be calculated as

Lab reports are worth 100 points each.

Finals test which is the actual crime scene processing will comprise 25% of the lab grade.

The laboratory grade will count as 30% of your overall grade for the PHSC 1130 course. Labs missed due to an excused absence may be made up at the convenience of both the professor and student.

**Final Exam Policy:**

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.

**Department/Division Policy on Academic Dishonesty:**

Any academic dishonesty case will be handled in accordance with the Academic Honor Review Procedure established by the Commandant. Cheating on exams, plagiarism and copying assignments are serious offenses at NMMI and will not be tolerated. An explanation of what constitutes academic dishonesty is found in the Academic Skills Manual, NMMI. A student guilty of academic dishonesty will be given an “F” for the course and the reasons for the failing grade will be submitted to the Commandant. It is expected on your honor that homework assignments will not be copied from the text or another’s work.

**Course Outline.**

The topics may be changed with or without notice.

Date

Task

Jan 22 - Orientation/ Lab Turn-in

Jan 29 - Collection, Packing, Chain of Custody of Evidence

Feb 5 - Marking/ Dusting of Money Bills/ UV examination for Entrapment Cases

Feb 12 - Moulage (Casting and Molding)

Feb 19 - Crime Scene notetaking/ Types of crime scene search

Feb 26 - Crime Scene Sketch

Mar 5 - Crime Scene Photography

Mar 12 - Conway Microdiffusion Test for Blood Alcohol/ Aspirin Poisoning Experiment

Mar 26 - Educational Tour at Medical Examiners’ Office

Apr 2 – Death Investigation Case Analysis

Apr 9 - Rehearsal/Practice for the Finals Practical

Apr 16 - Crime Scene Processing practical (Group 1) – Finals

Apr 23 - Crime Scene Processing practical (Group 2) - Finals

Apr 30 – Educational Tour at Santa Fe Forensic Lab

- Chemical Examination for Methamphetamine and/ or Cocaine

**Assessment Statement.**

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.

# **Crime Scene Sketching and Measurement Methods**

## **I. Introduction**

Crime scene documentation is fundamental to forensic investigations, as it provides crucial visual records that help reconstruct events, understand evidence placement, and support legal proceedings. One of the most important forms of documentation is the crime scene sketch, which offers a visual representation of the scene and the placement of evidence. However, creating an accurate sketch requires more than artistic ability, it demands precision, spatial awareness, and systematic measurement techniques. For this reason, crime scene investigators employ various sketching and measurement methods, each tailored to specific crime scene environments and the nature of the evidence (James, Nordby, & Bell, 2014; Lee & Gaensslen, 2015).

Crime scene sketches can be categorized into four main types: overview sketch, elevation sketch, exploded/cross projection view, and perspective sketch. Each type serves a unique purpose in documenting the scene, ensuring that every relevant spatial and evidentiary detail is captured for future analysis (Osterburg & Ward, 2010).

### **1. Overview Sketch**

The overview sketch is a to-scale, bird's-eye representation of the entire crime scene. It includes the perimeter of the area, fixed objects such as walls and furniture, and the locations of key pieces of evidence (Baldwin, 2018). Its primary function is to provide investigators, analysts, and court officials with a clear understanding of the spatial relationships among items within the scene. To ensure accuracy, investigators must establish fixed reference points, such as corners of rooms or immovable objects, from which all measurements are taken. These reference points act as anchors, allowing for reproducibility of distance and spatial orientation measurements. Using consistent reference points minimizes human error and strengthens the credibility of the scene reconstruction, which is critical for court presentation and admissibility (James et al., 2014).

## **2. Elevation Sketch**

An elevation sketch depicts the crime scene from a side view, emphasizing vertical relationships rather than horizontal layouts. It is particularly useful when documenting evidence located above ground level, such as footprints on walls, bloodstains on doors, or objects on shelves (Lee & Gaensslen, 2015). Elevation sketches provide insight into the height and relative positioning of evidence that may not be visible or interpretable from a top-down perspective. For instance, while an overview sketch shows spatial distribution, an elevation sketch clarifies how high or low the evidence is positioned, helping investigators interpret possible actions of the suspect or victim (Osterburg & Ward, 2010). In this way, the elevation sketch complements the overview sketch by highlighting details that reveal vertical motion or interaction within the scene.

## **3. Exploded/Cross Projection View**

The exploded or cross projection view combines both horizontal and vertical perspectives by "unfolding" the walls, ceiling, and floor of a three-dimensional scene into a two-dimensional representation (Baldwin, 2018). This technique is ideal for documenting complex indoor environments, such as rooms where evidence appears on multiple surfaces. For example, in a shooting scene, bullet holes on walls, blood spatters on the floor, and fingerprints on furniture can all be depicted together in one diagram. By representing all surfaces simultaneously, investigators can clearly illustrate how different pieces of evidence interact spatially. This comprehensive view allows for better interpretation of trajectories, movement patterns, and the sequence of events that occurred within the scene (James et al., 2014).

## **4. Perspective Sketch**

A perspective sketch offers a realistic, three-dimensional depiction of the crime scene, showing depth and proportion from a specific viewpoint (Osterburg & Ward, 2010). This type of sketch captures how the scene would appear to the

human eye, giving viewers a sense of scale and relative distance between objects. Perspective sketches are often used in court presentations to help jurors or judges visualize the scene as it may have appeared at the time of the incident. Although not always to scale, this sketch type is invaluable for explaining spatial relationships and helping non-technical audiences grasp the dynamics of the crime scene (Lee & Gaensslen, 2015).

To accurately document a crime scene, investigators rely on precise measurement techniques that ensure evidence locations are reproducible and defensible in court. The main measurement methods used in forensic documentation include the triangulation method, rectangular coordinate method, polar coordinate method, and transecting baseline coordinate method. Each method offers distinct advantages depending on the shape, size, and environment of the crime scene (Baldwin, 2018; James et al., 2014).

### **1. Triangulation Method**

The triangulation method is one of the most widely used measurement techniques in forensic investigations. It involves identifying two fixed reference points, such as corners of a wall, trees, or immovable structures, and measuring the straight-line distances from each point to a specific piece of evidence (Baldwin, 2018). The evidence's location is then established at the intersection of these measurements, forming a triangle. This method is particularly effective in irregularly shaped or outdoor crime scenes, where there may be few straight lines or right angles to use as guides. Triangulation ensures that even in cluttered or non-geometric spaces, evidence positions can be recorded with high accuracy and later reconstructed with confidence (James et al., 2014).

### **2. Rectangular Coordinate Method**

The rectangular coordinate method uses two perpendicular reference lines, typically formed by the walls of a room or the boundaries of the scene, to create a grid system (Lee & Gaensslen, 2015). Evidence locations are measured along these horizontal and vertical axes, similar to points on a Cartesian

coordinate plane. This method is ideal for indoor environments such as hallways, offices, or bedrooms, where defined right angles exist. Because of its simplicity and precision, it remains a foundational approach in crime scene measurement and sketching (Osterburg & Ward, 2010). It allows investigators to clearly convey where each piece of evidence is situated relative to fixed architectural features.

### **3. Polar Coordinate Method**

The polar coordinate method is particularly effective for circular or radial scenes, such as those involving explosions or outdoor areas where evidence is distributed around a central point (Osterburg & Ward, 2010). In this method, a fixed origin point is established, and the distance and angle from that origin to each piece of evidence are measured. The use of angles and radii allows for accurate depiction of evidence spread in non-linear environments. This approach is commonly used for outdoor crime scenes, such as fields or parking lots, where traditional perpendicular or rectangular measurements are difficult to apply (Baldwin, 2018).

### **4. Transecting Baseline Coordinate Method**

The transecting baseline coordinate method is often employed in large-scale or complex scenes. Investigators establish a baseline along a significant feature, such as a road, wall, or natural boundary, and extend perpendicular lines (transects) from that baseline across the scene (Lee & Gaensslen, 2015). Evidence is measured along and perpendicular to these transects, creating a network of reference points. This method is versatile and scalable, making it ideal for documenting extensive outdoor scenes or multi-room structures. It provides a clear framework for recording distances while maintaining proportional accuracy across a broad area (James et al., 2014).

Accurate crime scene sketches and measurement methods form the foundation of reliable forensic documentation. Each sketch type—overview, elevation, exploded/cross projection, and perspective—serves a specific function in visualizing spatial and evidentiary relationships. Similarly, the use of

measurement techniques such as triangulation, rectangular coordinates, polar coordinates, and transecting baselines ensures that evidence is recorded with precision and can withstand legal scrutiny. Together, these documentation methods not only preserve the integrity of the scene but also strengthen the evidentiary foundation necessary for reconstruction, analysis, and courtroom presentation (Baldwin, 2018; Lee & Gaensslen, 2015).

#### References:

- Baldwin, J. (2018). *Crime Scene Investigation: A Guide for Law Enforcement*. Cengage Learning.
- James, S. H., Nordby, J. J., & Bell, S. (2014). *Forensic Science: An Introduction to Scientific and Investigative Techniques*. CRC Press.
- Lee, H. C., & Gaensslen, R. E. (2015). *Forensic Science: An Introduction to Criminalistics*. McGraw-Hill.
- Osterburg, J. W., & Ward, R. H. (2010). *Criminal Investigation: A Method for Reconstructing the Past*. Anderson Publishing.

## **II. Safety Precautions**

1. Wear gloves, long sleeves, and sturdy footwear to protect yourself from potential hazards such as sharp objects, rough terrain, or contaminated surfaces at the crime scene.
2. Be mindful of environmental hazards such as uneven ground, weather conditions, or nearby traffic. Ensure the scene is safe to access and avoid any potentially dangerous or unstable areas.
3. Use measuring tools and sketching materials carefully to avoid injury. Ensure all tools are in good condition and securely stored when not in use to prevent accidents.
4. Handle all evidence with care to prevent contamination. Follow proper procedures for documenting and measuring evidence without disturbing the scene.
5. During outdoor activities, ensure regular hydration and take breaks as needed, especially in hot or humid conditions, to avoid heat exhaustion or dehydration.

## **III. Materials Needed**

- Graph paper or blank sketch paper



- Pencil and eraser
- Ruler or straight edge
- Measuring tape
- Compass (optional)
- Protractor (optional)
- Crime scene markers (real or simulated)

#### **IV. Procedure:**

##### **1. Preparation and Scene Orientation:**

- a. Secure the scene and determine the boundaries.
- b. Identify key fixed reference points such as walls, doors, or immovable objects.
- c. Establish a clear **north** direction and indicate it on your sketch.

##### **2. Outline the Crime Scene:**

- a. Lightly sketch the general perimeter of the crime scene.
- b. Include all major fixed objects (furniture, doors, windows, etc.).

##### **3. Positioning Evidence Using Triangulation:**

- a. Select two fixed reference points that will be used for measurements.
- b. Measure the straight-line distance from each reference point to the center of the item of evidence.
- c. Record these measurements on the sketch next to the corresponding evidence.

##### **4. Labeling and Annotations:**

- a. Assign numbers or letters to each piece of evidence.
- b. Label all fixed objects clearly.
- c. Add a key/legend describing the symbols and labels used in the sketch.

##### **5. Finalizing the Sketch:**

- a. Ensure measurements are accurate and correspond correctly to the

scene.

b. Include the case number, date, location, and name of the investigator

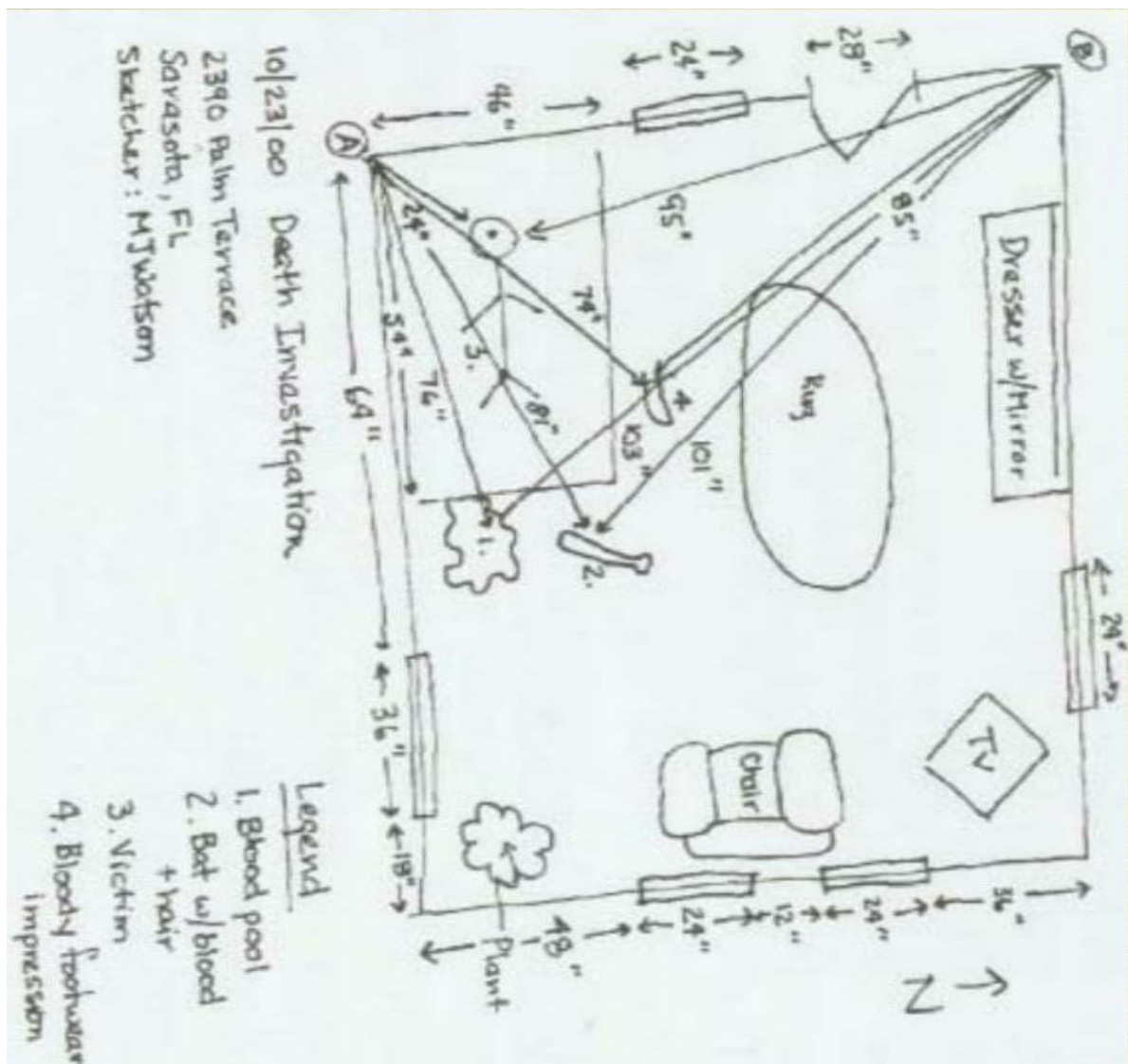
c. Review and make necessary adjustments for clarity.

6. **Submission and Documentation:**

a. Attach any field notes or additional observations.

b. Submit the completed rough sketch as part of the crime scene documentation

**SAMPLE ROUGH SKETCH**



# CRIME SCENE SKETCH

**DISCLAIMER**

The information provided is only intended to be general summary information for educational and classroom use only. This information does not replace written law or regulations, nor does it replace professional law enforcement advice, training, or procedure. If you have specific questions about crime scene sketch procedures, safety equipment, policies, techniques, documentation, etc., as it relates to law enforcement, always seek the advice of trained professionals.

## LEGEND

Items / Evidence

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_
- 9. \_\_\_\_\_
- 10. \_\_\_\_\_
- 11. \_\_\_\_\_
- 12. \_\_\_\_\_
- 13. \_\_\_\_\_
- 14. \_\_\_\_\_
- 15. \_\_\_\_\_
- 16. \_\_\_\_\_
- 17. \_\_\_\_\_
- 18. \_\_\_\_\_
- 19. \_\_\_\_\_

Case #

Sketch Artists Name

Date Sketch Drawn

**NOT TO SCALE**

## **V. Post lab Questions**

1. Why is it important to establish fixed reference points before measuring the location of evidence during a crime scene investigation? Explain the role of fixed reference points in ensuring the accuracy of measurements.

2. What are the advantages of using the triangulation method over the rectangular coordinate method in certain crime scene scenarios? Provide examples of crime scene layouts where triangulation would be preferred and why.

3. How does the elevation sketch differ from the overview sketch in terms of documenting a crime scene? Describe the specific aspects of the scene that would be emphasized in an elevation sketch versus an overview sketch.

4. Explain how the polar coordinate method can be applied in a circular crime scene, such as an outdoor area with a circular layout. Discuss the benefits of using the polar coordinate method in this context compared to other measurement techniques.

5. What is the purpose of labeling evidence with numbers or letters in both rough and smooth sketches, and how does this practice enhance the documentation process? Discuss how labeling contributes to the integrity of the evidence and the clarity of the scene representation.

6. In what ways does the smooth sketch differ from the rough sketch in terms of detail, accuracy, and use in court? Explain why the smooth sketch is considered a more formal representation and why it is often used in legal proceedings.



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5777                              |
| Institution        | NMMI                              |
| Applicant(s)       | yang@nmmi.edu                     |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-01-21 07:45 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Orlando Griego

### Chief Academic Officer Email

ogriego@nmmi.edu

### Registrar Name

Nekeya Bertrand

### Registrar Email

bertrand@nmmi.edu

### Course's Academic Department

Science department

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

PHSC

### Number

1130

### Title

FORENSIC SCIENCE II

### Number of credits

4

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

No

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

Yes

## Co-requisite Course

---

### Prefix

PHSC

---

### Number

1130L

---

### Title

FORENSIC SCIENCE II Lab

## New Mexico Common Course Information

---

### Prefix

PHSC

---

### Number

1130

---

### Title

FORENSIC SCIENCE II

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility



## Section B. Learning Outcomes

---

List all common course student learning outcomes for the course.

Not Available

---

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

Course Outcomes:

A successful student will learn basic skills in scientific methodology, proper laboratory safety, and proper measuring techniques & equipment. A successful student will have beginner's skill in recognition, collection and preservation of physical evidence, as well as techniques on testing physical evidence.

Course Learning Objectives:

By the completion of this course, the cadet will be able to:

Demonstrate crime management techniques

Locate relevant physical evidence at a crime scene based on crime scene type

Demonstrate evidence documentation procedures including sketching, notetaking, and photography

Identify appropriate processing techniques for physical evidence

Apply appropriate field-based processing techniques to physical evidence

alleged offense, and evidence type

Describe situations that threaten evidence admissibility in court

Assess safety considerations of crime scenes for investigators and laboratory analysts

Analyze ethical concerns for crime scene investigators, crime laboratories, and the role of forensic science within the criminal justice system as a whole

## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

The proposed course develops critical thinking by guiding cadets through problem setting, evidence acquisition, evidence evaluation, and sound reasoning. Cadets learn to define investigative problems through crime scene management, safety assessment, and legal considerations. Evidence acquisition is emphasized through hands-on training in locating, documenting, collecting, and preserving physical evidence using proper forensic protocols. Evidence evaluation is developed through laboratory analysis of fingerprints, firearms, drugs, and trace materials. Cadets apply the scientific method to interpret findings, recognize limitations, and form logical, ethical, and court-admissible conclusions.

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

The proposed course strengthens quantitative reasoning by requiring cadets to communicate and interpret quantitative information through crime scene measurements, sketching, photography scales, and laboratory data recording. Cadets analyze quantitative arguments when evaluating fingerprint minutiae patterns, ballistic measurements, toolmark comparisons, drug analysis results, and fire scene indicators. The application of quantitative models is emphasized through trajectory analysis, distance determination, evidence reconstruction, and interpretation of analytical chemistry results. By integrating measurement techniques, data interpretation, and scientific calculations, cadets develop the ability to apply mathematical and analytical reasoning to real-world forensic investigations.

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

This promotes personal and social responsibility by emphasizing ethical reasoning and collaboration skills. Cadets examine ethical concerns related to crime scene investigation, evidence handling, laboratory integrity, and courtroom admissibility, reinforcing professional accountability and respect for legal and human rights. Ethical case discussions highlight the impact of forensic decisions on victims, families, and communities. Collaboration skills are developed through team-based crime scene processing, laboratory exercises, and evidence documentation activities that mirror real forensic units. Cadets learn to communicate effectively, respect diverse perspectives, and uphold shared values of integrity, service, and justice.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.nmmi.edu/wp-content/uploads/2022/11/ACADEMIC-ASSESSMENT-PLAN.pdf)

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

# Application History

| Type          | username      | Text                                                       | Timestamp                          |
|---------------|---------------|------------------------------------------------------------|------------------------------------|
| Submittal     | yang@nmml.edu | Submitted by yang@nmml.edu                                 | 2026-01-21 07:45 PM (US /Mountain) |
| Authorization | yang@nmml.edu | yang@nmml.edu has authorized the application for submittal | 2026-01-21 07:45 PM (US /Mountain) |
| Created       | yang@nmml.edu | Application started by yang@nmml.edu                       | 2026-01-21 07:33 PM (US /Mountain) |

## **FORENSIC SCIENCE II**

*Forensic Science PHSC 1130*

**Semester:** Spring

**Year:** 2026

**Course Number:** PHSC 1130

**Meeting Days, Times and Place:** M, W, F - 10:05 to 10:55, McClure 100

**Professor:** MAJ. BEAUNE VILLARAZA

**Email:** villaraza@nmmti.edu **Phone:** (575) 624-8195

### **Course Description:**

This course is designed to introduce students to recognition, documentation and collection of physical evidence in a practical environment. Course material will be presented in such a manner as to allow practical application of proper technique, limited analysis and presentation in the field. A laboratory component of the course will be conducted in concert.

### **General Scope of the Course:**

This course covers such topics as how to initially approach a crime scene; the importance of following proper procedure and protocol in searching, collecting, and packaging crime scene evidence; how to ensure the integrity and chain of evidence rules that will be acceptable in a court of law; how to identify and collect various forms of evidence ranging from biological fluids to weapons and firearms; and how to document a crime scene as well as explain different techniques for handling evidence.

**Prerequisite:** None

**Sequences:** None

**Co-requisite:** Forensic Science II Lab (PHSC 1130L)

### **Course Outcomes:**

A successful student will learn basic skills in scientific methodology, proper laboratory safety, and proper measuring techniques & equipment. A successful student will have beginner's skill in recognition, collection and preservation of physical evidence, as well as techniques on testing physical evidence.

### **Course Learning Objectives:**

By the completion of this course, the cadet will be able to:

- Demonstrate crime management techniques
- Locate relevant physical evidence at a crime scene based on crime scene type
- Demonstrate evidence documentation procedures including sketching, notetaking, and photography
- Identify appropriate processing techniques for physical evidence
- Apply appropriate field-based processing techniques to physical evidence

- Determine appropriate evidence collection procedures based on the crime scene characteristics, alleged offense, and evidence type
- Describe situations that threaten evidence admissibility in court
- Assess safety considerations of crime scenes for investigators and laboratory analysts
- Analyze ethical concerns for crime scene investigators, crime laboratories, and the role of forensic science within the criminal justice system as a whole

### Departmental outcomes

- A. Cadets will be able to demonstrate an understanding of core knowledge of the sciences.
  - B. Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
  - C. Cadets will be able to apply the scientific method to solve problems.
  - D. Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
  - E. Cadets will be able to acquire and synthesize scientific information from a variety of sources.
- Cadets will be able to apply techniques and instrumentation to solve problems.

### Procedures and Classroom Rules:

- I report all absences.
- **No late work is accepted.**
- Make-up work is allowed only for excused absences. It is the student's responsibility to meet with me to schedule a make-up lab, homework or test.
- Follow Math and Science Electronics Policy. Cellular phones must be placed in a shoebox upon entry to the classroom. Use of electronics (laptop, iWatch, cellphone, taking pictures of the notes, etc.) are strictly prohibited and will result in the grade of "0" on the quiz/test.

### Texts:

NMMI Forensic Science Laboratory Manual by Villaraza ISBN-13 : 979-8272981318  
 Forensic Chemistry and Toxicology Methods of Analysis by Villaraza  
 ISBN-13 : 979-8646680533

### Grading Procedure:

Course grade will be calculated as

$$0.70[\text{sum of tests} + \text{final exam} + \text{homework} + \text{quizzes}] + 0.30[\text{lab average}]$$

|               |          |              |          |
|---------------|----------|--------------|----------|
| 100 %- 90.0 % | <b>A</b> | 89.9%- 80.0% | <b>B</b> |
| 79.9%-70.0%   | <b>C</b> | 69.9%- 60.0% | <b>D</b> |
| 59.9%-0%      | <b>F</b> |              |          |

**Final Exam Policy:**

A mandatory comprehensive final exam 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.

**Department/Division Policy on Academic Dishonesty:**

Any academic dishonesty case will be handled in accordance with the Academic Honor Review Procedure established by the Commandant. Cheating on exams, plagiarism and copying assignments are serious offenses at NMMI and will not be tolerated. An explanation of what constitutes academic dishonesty is found in the Academic Skills Manual, NMMI. A student guilty of academic dishonesty will be given an “F” for the course and the reasons for the failing grade will be submitted to the Commandant. It is expected on your honor that homework assignments will not be copied from the text or another’s work.

**Course Outline**

The topics may be changed with or without notice.

**Orientation – Jan. 12****Chapter 1 – Introduction to Forensic Science - Jan. 14, 16, 21**

- History and Development
- Organization of Crime Lab
- The Scientific Method
- Admissibility of Evidence in Court
- The Forensic Scientist

**Chapter 2 – Physical Evidence – Jan 23, 26, 28**

- Legal Aspects of Evidence
- Types of Evidence
- Purpose of Examining Physical Evidence

**Test 1 (Chapter 1 and 2) – Jan 30****Chapter 3 – Impression Evidence –Feb, 2, 4, 6**

- Collection Methods
- Individual and Class Characteristics
- Toolmarks
- Restoration of Tampered Serial Number
- Evidence Preservation

**Chapter 4 – Crime Scene Processing – Feb 9, 11, 13, 18, 20**

- Team Composition and Functions
- Procedure in Processing a Crime Scene
- CS Photography
- CS Sketching

Measuring Methods  
Types of Search

**Test 2 – (Chapter 3 and 4) – Feb 23**

Chapter 5 – Forensic Dactyloscopy –Feb 25, March 2. 4

History of Fingerprints

Dogmatic Principle

Types of Fingerprints/ Minutiae patterns

Methods of Developing Latent prints and Taking of Standard Prints

Chapter 6 – Forensic Photography – March 6, 9, 11

Elements of Photography/ Exposure Triangle

Photography in Crime Scene Investigation

Procedure in Photographing Crime Scene

Photographing Evidence

Parts of the Camera and Controls

**Test 3 – Chapter 5 and 6 – March 13**

Chapter 7 – Death Investigation – March 23, 25, 27

Types of Death

Autopsy

Documenting Cadavers in the Crime Scene

Types of Wounds

Post-Mortem Changes

Forensic Toxicology

Chapter 8 – Forensic Ballistics/ Firearms Identification – March 30, Apr 1, Apr 8

Types of Firearms

Ammunition/ Bullet and Cartridge Comparisons

Microscopic Analysis using Comparison Microscope

**Test 4 (Chapter 7 and 8) – April 10**

Chapter 9 – Forensic Chemistry – April 13, 15, 17

Dangerous Drugs

Examination of Dangerous Drugs

Explosives

Gunshot Residues

Chapter 10 – Fire and Arson Investigation – April 20, 22, 24

Fire Triangle

Phases of Fire

Classes of Fire

Fire Extinguishment Theory



Arson Investigation  
The Fire Scene  
Evidence Collection

**Test 5 (Chapter 9 and 10) – April 27**

Finals Review – April 29, May 1

**Finals – May 4– 6**

**Additional Activities**

- 2026 Online Spring Forensic Science Symposium  
Henry C. Lee Institute of Forensic Science, Univ. of New Haven
- Educational Tour at the Medical Investigator's Office (Albuquerque)
- Educational Tour at the Santa Fe Forensic Laboratory

**Assessment Statement.**

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.

## FORENSIC CRIME SCENE INVESTIGATION LAB

*Forensic Science Lab PHSC 1130L*

**Semester:** Spring **Year:** 2026

**Course Number:** PHSC 1130L

**Meeting Days, Times and Place:** Th 09:10 – 10:55, MC205

**Professor:** Maj. Beaune Villaraza

**Email:** villaraza@nmmt.edu

**Phone:** (575) 6248195

**Office hours & Location:**

|                           | Monday                        | Tuesday                       | Wednesday                     | Thursday                      | Friday                        |
|---------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| <b>0715-0810</b>          | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Commandant's<br>Time          | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 |
| <b>1st<br/>0815-0905</b>  | CHM 032<br>McClure 111        | CHM 032<br>McClure 111        | CHM 032<br>McClure 111        | CHM 032<br>McClure 111        | CHM 032<br>McClure 111        |
| <b>2nd<br/>0910-1000</b>  | PHSC 1130<br>McClure 111      | Tutoring Hours<br>McClure 100 | PHSC 1130<br>McClure 111      | PHSC 1130L<br>McClure 205     | PHSC 1130<br>McClure 111      |
| <b>3rd<br/>1005-1055</b>  | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | PHSC 1130L<br>McClure 205     | Tutoring Hours<br>McClure 100 |
| <b>4th<br/>1100- 1150</b> | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 |
| <b>Lunch<br/>1150</b>     | <b>Lunch<br/>1150</b>         | <b>Lunch<br/>1150</b>         | <b>Lunch<br/>1150</b>         | <b>Lunch<br/>1150</b>         | <b>Lunch<br/>1150</b>         |
| <b>5th<br/>1250- 1340</b> | CHEM 1215<br>McClure 116      | Tutoring Hours<br>McClure 100 | CHEM 1215<br>McClure 116      | CHEM 1215L<br>McClure 205     | CHEM 1215<br>McClure 116      |
| <b>6th<br/>1345-1435</b>  | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | CHEM 1215L<br>McClure 205     | Tutoring Hours<br>McClure 100 |
| <b>7th<br/>1440-1530</b>  | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | Tutoring Hours<br>McClure 100 | CHEM 1215L<br>McClure 205     | Tutoring Hours<br>McClure 100 |

### Course Description:

Covers scientific procedure for processing a crime scene and recognizing scientific evidence. Forensic photography and collection of physical evidence are also examined. Specific skills studied include collection of fingerprints and footprints, toolmark evidence collection, blood spatter analysis, and forensic analysis of firearms.

**Prerequisite:** PHSC 1120 or any other 4 – unit lab science but not required.

**Co-requisite:** PHSC 1130

### Course Outcomes:

A successful student will learn basic skills in scientific methodology, proper laboratory safety, and proper measuring techniques & equipment. A successful student will have beginner's skill in recognition, collection and preservation of physical evidence, as well as techniques on testing physical evidence.

**Departmental outcomes**

- A. Cadets will be able to demonstrate an understanding of core knowledge of the sciences.
  - B. Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
  - C. Cadets will be able to apply the scientific method to solve problems.
  - D. Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
  - E. Cadets will be able to acquire and synthesize scientific information from a variety of sources.
- Cadets will be able to apply techniques and instrumentation to solve problems.

**Procedures and Classroom Rules:**

- I report all absences.
- **No late work is accepted.**
- Make-up work is allowed only for excused absences. It is the student's responsibility to meet with me to schedule a make-up lab, homework or test.
- Follow Math and Science Electronics Policy. Cellular phones must be placed in a shoebox upon entry to the classroom. Use of electronics (laptop, iWatch, cellphone, taking pictures of the notes, etc.) are strictly prohibited and will result in the grade of "0" on the quiz/test.

**Text:**

NMMI Forensic Science Laboratory Manual by Villaraza ISBN-13 : 979-8272981318  
Forensic Chemistry and Toxicology Methods of Analysis by Villaraza  
ISBN-13 : 979-8646680533

**Grading Procedure:**

Course grade will be calculated as

Lab reports are worth 100 points each.

Finals test which is the actual crime scene processing will comprise 25% of the lab grade.

The laboratory grade will count as 30% of your overall grade for the PHSC 1130 course. Labs missed due to an excused absence may be made up at the convenience of both the professor and student.

**Final Exam Policy:**

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.

**Department/Division Policy on Academic Dishonesty:**

Any academic dishonesty case will be handled in accordance with the Academic Honor Review Procedure established by the Commandant. Cheating on exams, plagiarism and copying assignments are serious offenses at NMMI and will not be tolerated. An explanation of what constitutes academic dishonesty is found in the Academic Skills Manual, NMMI. A student guilty of academic dishonesty will be given an “F” for the course and the reasons for the failing grade will be submitted to the Commandant. It is expected on your honor that homework assignments will not be copied from the text or another’s work.

**Course Outline.**

The topics may be changed with or without notice.

Date

Task

Jan 22 - Orientation/ Lab Turn-in

Jan 29 - Collection, Packing, Chain of Custody of Evidence

Feb 5 - Marking/ Dusting of Money Bills/ UV examination for Entrapment Cases

Feb 12 - Moulage (Casting and Molding)

Feb 19 - Crime Scene notetaking/ Types of crime scene search

Feb 26 - Crime Scene Sketch

Mar 5 - Crime Scene Photography

Mar 12 - Conway Microdiffusion Test for Blood Alcohol/ Aspirin Poisoning Experiment

Mar 26 - Educational Tour at Medical Examiners’ Office

Apr 2 – Death Investigation Case Analysis

Apr 9 - Rehearsal/Practice for the Finals Practical

Apr 16 - Crime Scene Processing practical (Group 1) – Finals

Apr 23 - Crime Scene Processing practical (Group 2) - Finals

Apr 30 – Educational Tour at Santa Fe Forensic Lab

- Chemical Examination for Methamphetamine and/ or Cocaine

**Assessment Statement.**

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.

# **Crime Scene Sketching and Measurement Methods**

## **I. Introduction**

Crime scene documentation is fundamental to forensic investigations, as it provides crucial visual records that help reconstruct events, understand evidence placement, and support legal proceedings. One of the most important forms of documentation is the crime scene sketch, which offers a visual representation of the scene and the placement of evidence. However, creating an accurate sketch requires more than artistic ability, it demands precision, spatial awareness, and systematic measurement techniques. For this reason, crime scene investigators employ various sketching and measurement methods, each tailored to specific crime scene environments and the nature of the evidence (James, Nordby, & Bell, 2014; Lee & Gaensslen, 2015).

Crime scene sketches can be categorized into four main types: overview sketch, elevation sketch, exploded/cross projection view, and perspective sketch. Each type serves a unique purpose in documenting the scene, ensuring that every relevant spatial and evidentiary detail is captured for future analysis (Osterburg & Ward, 2010).

### **1. Overview Sketch**

The overview sketch is a to-scale, bird's-eye representation of the entire crime scene. It includes the perimeter of the area, fixed objects such as walls and furniture, and the locations of key pieces of evidence (Baldwin, 2018). Its primary function is to provide investigators, analysts, and court officials with a clear understanding of the spatial relationships among items within the scene. To ensure accuracy, investigators must establish fixed reference points, such as corners of rooms or immovable objects, from which all measurements are taken. These reference points act as anchors, allowing for reproducibility of distance and spatial orientation measurements. Using consistent reference points minimizes human error and strengthens the credibility of the scene reconstruction, which is critical for court presentation and admissibility (James et al., 2014).

## **2. Elevation Sketch**

An elevation sketch depicts the crime scene from a side view, emphasizing vertical relationships rather than horizontal layouts. It is particularly useful when documenting evidence located above ground level, such as footprints on walls, bloodstains on doors, or objects on shelves (Lee & Gaensslen, 2015). Elevation sketches provide insight into the height and relative positioning of evidence that may not be visible or interpretable from a top-down perspective. For instance, while an overview sketch shows spatial distribution, an elevation sketch clarifies how high or low the evidence is positioned, helping investigators interpret possible actions of the suspect or victim (Osterburg & Ward, 2010). In this way, the elevation sketch complements the overview sketch by highlighting details that reveal vertical motion or interaction within the scene.

## **3. Exploded/Cross Projection View**

The exploded or cross projection view combines both horizontal and vertical perspectives by "unfolding" the walls, ceiling, and floor of a three-dimensional scene into a two-dimensional representation (Baldwin, 2018). This technique is ideal for documenting complex indoor environments, such as rooms where evidence appears on multiple surfaces. For example, in a shooting scene, bullet holes on walls, blood spatters on the floor, and fingerprints on furniture can all be depicted together in one diagram. By representing all surfaces simultaneously, investigators can clearly illustrate how different pieces of evidence interact spatially. This comprehensive view allows for better interpretation of trajectories, movement patterns, and the sequence of events that occurred within the scene (James et al., 2014).

## **4. Perspective Sketch**

A perspective sketch offers a realistic, three-dimensional depiction of the crime scene, showing depth and proportion from a specific viewpoint (Osterburg & Ward, 2010). This type of sketch captures how the scene would appear to the

human eye, giving viewers a sense of scale and relative distance between objects. Perspective sketches are often used in court presentations to help jurors or judges visualize the scene as it may have appeared at the time of the incident. Although not always to scale, this sketch type is invaluable for explaining spatial relationships and helping non-technical audiences grasp the dynamics of the crime scene (Lee & Gaensslen, 2015).

To accurately document a crime scene, investigators rely on precise measurement techniques that ensure evidence locations are reproducible and defensible in court. The main measurement methods used in forensic documentation include the triangulation method, rectangular coordinate method, polar coordinate method, and transecting baseline coordinate method. Each method offers distinct advantages depending on the shape, size, and environment of the crime scene (Baldwin, 2018; James et al., 2014).

### **1. Triangulation Method**

The triangulation method is one of the most widely used measurement techniques in forensic investigations. It involves identifying two fixed reference points, such as corners of a wall, trees, or immovable structures, and measuring the straight-line distances from each point to a specific piece of evidence (Baldwin, 2018). The evidence's location is then established at the intersection of these measurements, forming a triangle. This method is particularly effective in irregularly shaped or outdoor crime scenes, where there may be few straight lines or right angles to use as guides. Triangulation ensures that even in cluttered or non-geometric spaces, evidence positions can be recorded with high accuracy and later reconstructed with confidence (James et al., 2014).

### **2. Rectangular Coordinate Method**

The rectangular coordinate method uses two perpendicular reference lines, typically formed by the walls of a room or the boundaries of the scene, to create a grid system (Lee & Gaensslen, 2015). Evidence locations are measured along these horizontal and vertical axes, similar to points on a Cartesian



coordinate plane. This method is ideal for indoor environments such as hallways, offices, or bedrooms, where defined right angles exist. Because of its simplicity and precision, it remains a foundational approach in crime scene measurement and sketching (Osterburg & Ward, 2010). It allows investigators to clearly convey where each piece of evidence is situated relative to fixed architectural features.

### **3. Polar Coordinate Method**

The polar coordinate method is particularly effective for circular or radial scenes, such as those involving explosions or outdoor areas where evidence is distributed around a central point (Osterburg & Ward, 2010). In this method, a fixed origin point is established, and the distance and angle from that origin to each piece of evidence are measured. The use of angles and radii allows for accurate depiction of evidence spread in non-linear environments. This approach is commonly used for outdoor crime scenes, such as fields or parking lots, where traditional perpendicular or rectangular measurements are difficult to apply (Baldwin, 2018).

### **4. Transecting Baseline Coordinate Method**

The transecting baseline coordinate method is often employed in large-scale or complex scenes. Investigators establish a baseline along a significant feature, such as a road, wall, or natural boundary, and extend perpendicular lines (transects) from that baseline across the scene (Lee & Gaensslen, 2015). Evidence is measured along and perpendicular to these transects, creating a network of reference points. This method is versatile and scalable, making it ideal for documenting extensive outdoor scenes or multi-room structures. It provides a clear framework for recording distances while maintaining proportional accuracy across a broad area (James et al., 2014).

Accurate crime scene sketches and measurement methods form the foundation of reliable forensic documentation. Each sketch type—overview, elevation, exploded/cross projection, and perspective—serves a specific function in visualizing spatial and evidentiary relationships. Similarly, the use of

measurement techniques such as triangulation, rectangular coordinates, polar coordinates, and transecting baselines ensures that evidence is recorded with precision and can withstand legal scrutiny. Together, these documentation methods not only preserve the integrity of the scene but also strengthen the evidentiary foundation necessary for reconstruction, analysis, and courtroom presentation (Baldwin, 2018; Lee & Gaensslen, 2015).

References:

- Baldwin, J. (2018). *Crime Scene Investigation: A Guide for Law Enforcement*. Cengage Learning.
- James, S. H., Nordby, J. J., & Bell, S. (2014). *Forensic Science: An Introduction to Scientific and Investigative Techniques*. CRC Press.
- Lee, H. C., & Gaensslen, R. E. (2015). *Forensic Science: An Introduction to Criminalistics*. McGraw-Hill.
- Osterburg, J. W., & Ward, R. H. (2010). *Criminal Investigation: A Method for Reconstructing the Past*. Anderson Publishing.

## **II. Safety Precautions**

1. Wear gloves, long sleeves, and sturdy footwear to protect yourself from potential hazards such as sharp objects, rough terrain, or contaminated surfaces at the crime scene.
2. Be mindful of environmental hazards such as uneven ground, weather conditions, or nearby traffic. Ensure the scene is safe to access and avoid any potentially dangerous or unstable areas.
3. Use measuring tools and sketching materials carefully to avoid injury. Ensure all tools are in good condition and securely stored when not in use to prevent accidents.
4. Handle all evidence with care to prevent contamination. Follow proper procedures for documenting and measuring evidence without disturbing the scene.
5. During outdoor activities, ensure regular hydration and take breaks as needed, especially in hot or humid conditions, to avoid heat exhaustion or dehydration.

## **III. Materials Needed**

- Graph paper or blank sketch paper

- Pencil and eraser
- Ruler or straight edge
- Measuring tape
- Compass (optional)
- Protractor (optional)
- Crime scene markers (real or simulated)

#### **IV. Procedure:**

##### **1. Preparation and Scene Orientation:**

- a. Secure the scene and determine the boundaries.
- b. Identify key fixed reference points such as walls, doors, or immovable objects.
- c. Establish a clear **north** direction and indicate it on your sketch.

##### **2. Outline the Crime Scene:**

- a. Lightly sketch the general perimeter of the crime scene.
- b. Include all major fixed objects (furniture, doors, windows, etc.).

##### **3. Positioning Evidence Using Triangulation:**

- a. Select two fixed reference points that will be used for measurements.
- b. Measure the straight-line distance from each reference point to the center of the item of evidence.
- c. Record these measurements on the sketch next to the corresponding evidence.

##### **4. Labeling and Annotations:**

- a. Assign numbers or letters to each piece of evidence.
- b. Label all fixed objects clearly.
- c. Add a key/legend describing the symbols and labels used in the sketch.

##### **5. Finalizing the Sketch:**

- a. Ensure measurements are accurate and correspond correctly to the

scene.

b. Include the case number, date, location, and name of the investigator

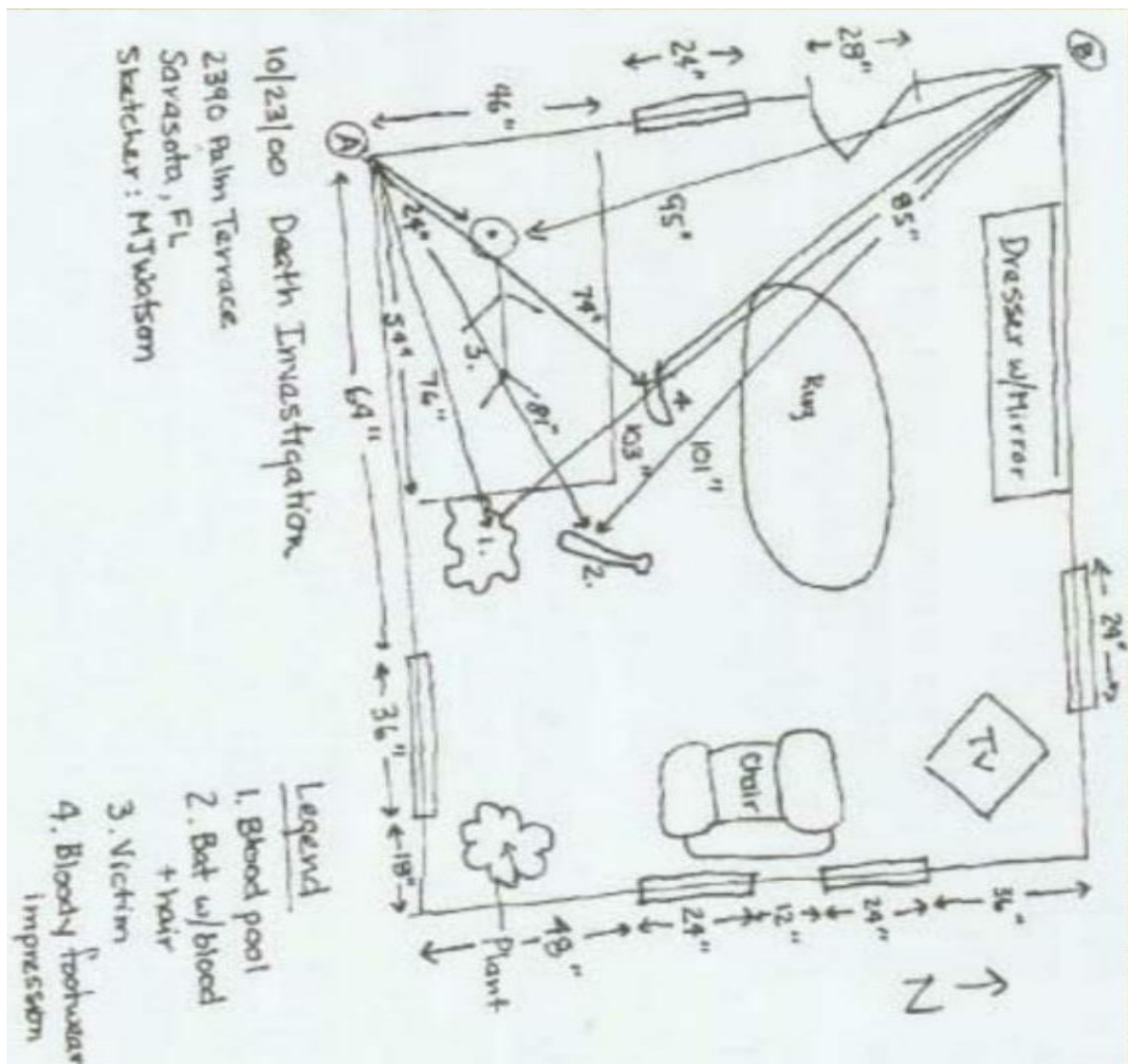
c. Review and make necessary adjustments for clarity.

6. **Submission and Documentation:**

a. Attach any field notes or additional observations.

b. Submit the completed rough sketch as part of the crime scene documentation

**SAMPLE ROUGH SKETCH**



# CRIME SCENE SKETCH

**DISCLAIMER**

The information provided is only intended to be general summary information for educational and classroom use only. This information does not replace written law or regulations, nor does it replace professional law enforcement advice, training, or procedure. If you have specific questions about crime scene sketch procedures, safety equipment, policies, techniques, documentation, etc., as it relates to law enforcement, always seek the advice of trained professionals.

## LEGEND

Items / Evidence

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_
- 9. \_\_\_\_\_
- 10. \_\_\_\_\_
- 11. \_\_\_\_\_
- 12. \_\_\_\_\_
- 13. \_\_\_\_\_
- 14. \_\_\_\_\_
- 15. \_\_\_\_\_
- 16. \_\_\_\_\_
- 17. \_\_\_\_\_
- 18. \_\_\_\_\_
- 19. \_\_\_\_\_

Case #

Sketch Artists Name

Date Sketch Drawn

**NOT TO SCALE**

## **V. Post lab Questions**

1. Why is it important to establish fixed reference points before measuring the location of evidence during a crime scene investigation? Explain the role of fixed reference points in ensuring the accuracy of measurements.

2. What are the advantages of using the triangulation method over the rectangular coordinate method in certain crime scene scenarios? Provide examples of crime scene layouts where triangulation would be preferred and why.

3. How does the elevation sketch differ from the overview sketch in terms of documenting a crime scene? Describe the specific aspects of the scene that would be emphasized in an elevation sketch versus an overview sketch.

4. Explain how the polar coordinate method can be applied in a circular crime scene, such as an outdoor area with a circular layout. Discuss the benefits of using the polar coordinate method in this context compared to other measurement techniques.

5. What is the purpose of labeling evidence with numbers or letters in both rough and smooth sketches, and how does this practice enhance the documentation process? Discuss how labeling contributes to the integrity of the evidence and the clarity of the scene representation.

6. In what ways does the smooth sketch differ from the rough sketch in terms of detail, accuracy, and use in court? Explain why the smooth sketch is considered a more formal representation and why it is often used in legal proceedings.



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5789                              |
| Institution        | NMMI                              |
| Applicant(s)       | yang@nmmi.edu                     |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-01-22 11:41 AM (US/Mountain) |



# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Orlando Griego

### Chief Academic Officer Email

ogriego@nmmi.edu

### Registrar Name

Nekeya Bertrand

### Registrar Email

bertrand@nmmi.edu

### Course's Academic Department

Science department

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

PHSC

### Number

1120

### Title

FORENSIC SCIENCE I

### Number of credits

4

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

No

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

Yes

## Co-requisite Course

---

### Prefix

PHSC

---

### Number

1120L

---

### Title

FORENSIC SCIENCE I Lab

## New Mexico Common Course Information

---

### Prefix

PHSC

---

### Number

1120

---

### Title

FORENSIC SCIENCE I

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

---

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

#### Student Learning Outcomes

1. Develop and utilize skills of scientific inquiry, asking questions, gathering, analyzing and interpreting data, drawing conclusions, predicting, and communicating results.
  2. Develop an awareness of forensic science issues that may impact learners and introduce the different techniques used to analyze a variety of crimes.
  3. Evaluate information and interpret graphs and charts to make informed forensic science decisions.
  4. Enhance academic skills including the use of electronic resources
- 

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

#### Course Outcomes

Upon satisfactory completion of Forensics, NMMI cadets will be able to:

1. Develop and utilize skills of scientific inquiry, asking questions, gathering, analyzing and interpreting data, drawing conclusions, predicting, and communicating results.
2. Develop and awareness of forensic science issues that may impact learners and introduce the different techniques used to analyze a variety of crimes.
3. Evaluate information and interpret graphs and charts to make informed forensic science decisions.
4. Enhance academic skills including the use of electronic resources.

#### Department Outcomes

Cadets will be able to demonstrate an understanding of core knowledge in the sciences.

Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.

Cadets will be able to apply the scientific method to solve problems.

Cadets will be able to acquire and synthesize scientific information from a variety of sources.

Cadets will be able to apply techniques and instrumentation to solve problems.

Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge

## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

In order to address problem solving in the Forensic Science I class, the lecture portion will introduce a problem-solving task. For example, the students will need to obtain evidence from an object for analysis. So, they are taught why collecting physical evidence correctly, in order to solve a crime scene scenario properly, is a must. Students are taught the format that the evidence needs to be collected in whether it be a computer program graphic image, or the like, which satisfied the evidence acquisition category. The students are taught how to evaluate whether the evidence that they will collect is of any useful value and whether it should be submitted within their conclusion for that particular case which they must prepare using the format they have learned during class sessions.

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

To satisfy the component of communication/representation of quantitative information in Forensic Science I, we present a problem like a blood pattern for instance. From there, we have to measure and record certain aspects from the blood stains patterns created at the crime scene, and using mathematical calculations that can be found in courses like Trigonometry. Students then take the calculations from that figure and determine angles and heights from evidence that we have. With that information, the students can determine some pieces of factual information from the crime scene blood pattern simply by creating mathematical models of the quantitative information that they have gathered.. We take mathematical calculations when we work on DNA evidence and sketching crime scenes as well.

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

In Forensic Science I, students are made aware that there are differences in other cultures that can account for how personality traits are developed. Personality traits are reviewed to account for which personality traits are most common to those that commit violent crime. There are also different physical traits among cultures that help with identification of a victim. Additionally, they are taught how to be morally strong in the face of temptation like doing what is right and not wrong by taking advantage of technology to reflect the wrong conclusion in their evidence collection. Additionally, they are given case studies that deal with human suffering and the correct emotions that should be displayed to be considered ethical in this world which may not always act ethically.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.nmmi.edu/wp-content/uploads/2022/11/ACADEMIC-ASSESSMENT-PLAN.pdf)

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

# Application History

| Type          | username      | Text                                                       | Timestamp                          |
|---------------|---------------|------------------------------------------------------------|------------------------------------|
| Submittal     | yang@nmml.edu | Submitted by yang@nmml.edu                                 | 2026-01-22 11:41 AM (US /Mountain) |
| Authorization | yang@nmml.edu | yang@nmml.edu has authorized the application for submittal | 2026-01-22 11:41 AM (US /Mountain) |
| Created       | yang@nmml.edu | Application started by yang@nmml.edu                       | 2026-01-22 11:26 AM (US /Mountain) |

# Forensics Science 1

## NMMI Syllabus

**Semester:** Spring

**Year:** 2026

**Course number:** PHSC 1120

Major Norris

"Ma'am"

Room 009 McClure

MWF

Office: 209 McClure

Ext. 8147

Office hours: 7:15 am-10:00am

Check my office door for other available times.

I'm here to help whenever my door is open.

Class Information available using CANVAS

Email: [knorris@nmmt.edu](mailto:knorris@nmmt.edu)

### Meeting Times

|                           | M                                    | T                                    | W                                    | TH                                   | F                                    |
|---------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Tutoring<br>7:15-8:00     | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | No Office Hours                      | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 |
| 1 <sup>st</sup> 8:15-9:05 | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 2 <sup>nd</sup> 0910      |                                      |                                      |                                      |                                      |                                      |
| 3 <sup>rd</sup> 1005      | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 4 <sup>th</sup> 1100      | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 |
| 5 <sup>th</sup> 11:50     | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 6 <sup>th</sup> 1:45      | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             |
| 7 <sup>th</sup> 2:40      |                                      | PHSC 1120L<br>McClure 009 or 205     |                                      |                                      |                                      |

### Course Description

An introduction to forensic science, emphasizing the multi-disciplinary approach required to document, understand, and solve forensic problems. Topics for this course include those on general science and applying scientific methods to answer questions of interest to the legal system. Case studies will be used to illustrate how science was used to solve crimes.

### Course Outcomes

Upon satisfactory completion of Forensics, NMMI cadets will be able to:

1. Develop and utilize skills of scientific inquiry, asking questions, gathering, analyzing and interpreting data, drawing conclusions, predicting, and communicating results.
2. Develop and awareness of forensic science issues that may impact learners and introduce the different techniques used to analyze a variety of crimes.
3. Evaluate information and interpret graphs and charts to make informed forensic science decisions.
4. Enhance academic skills including the use of electronic resources.

### Department Outcomes

- *Cadets will be able to demonstrate an understanding of core knowledge in the sciences.*
  - *Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.*
  - *Cadets will be able to apply the scientific method to solve problems.*
  - *Cadets will be able to acquire and synthesize scientific information from a variety of sources.*
  - *Cadets will be able to apply techniques and instrumentation to solve problems.*
- Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge*

### NMMI School Target Goals

Academic integrity – All students will show growth in sound ethical decision making by adhering to the values of service, integrity, and responsibility across the curriculum.

Problem solving – All students will increase their ability to use critical thinking and problem solving across the curriculum.

Leadership – All students will be provided opportunities in the classroom to model leadership during large and small group activities.

**Requisites for class: Enrollment in Forensics I Lab (PHSC 1120L)**



## Procedures and Classroom Rules

**You will be asked to leave the laboratory if you are not being safe or productive.**

**Cell phone use in the classroom is authorized only when approved by the instructor for academic purposes. Please follow the posted Math and Science Division electronic device policy.**

### Expectations/Procedures

1. Take your seat and prepare for class. Pen/Pencil Assignment of Day.
2. **No vulgarity.** This is not acceptable behavior. Any impolite words will not be allowed either.
3. I will give you a certain amount of time to finish notes when they are projected.  
No Computers will be allowed for note taking.
4. Water is allowed. No food or drink. You spill, you clean.
5. If you attend tutoring, it does not mean your assignment can be late.
6. Stay at your own lab area with assigned partners.
7. Use complete sentences when you hand in any work.
8. Lab misconduct will result in dismissal on first offense. You may not be allowed back if I see fit. Ex: Pushing, chemical mishandling. Do not yell across the room for my attention. I will be around the tables as time allows.

**Book: Introduction to Forensic Science and Criminalistics by R.E Gaensslen; Howard A. Harris; and Henry Lee. 1<sup>st</sup> Edition**  
**No lab Manual Required**

### Grading Procedures.

What you can look forward to...

- A. The course will cover selected chapters of the textbook. The text will be supplemented by discussions, group exercises, videos, and handouts.
- B. Laboratory: There will be one to two lab sessions per week.
- C. Tutoring – Tutoring is available in the morning at 7:15 except on Wed. Students with a D or F in the class should set up a tutoring schedule with me until the grade improves. **Improving your grade usually requires improvement in study habits and time management. Raising a grade through individual extra credit is not available.**  
Check my schedule for other available times.
- D. Computer Use - E-mail, CANVAS, and Internet assignments. –
  - a. Computers will be issued to cadets.
  - b. In case your computer is not working, computers are available each morning in Willson Hall on the main floor from 0715. These computers are also

available during the day when there is an open computer. There are computers available on the main floor of the library and in the Writing Lab (evening NSH).

- c. Make plans for computer-generated work if you do not have access to a computer in your room.
- E. Downloading programs from the Internet without permission is a violation of computer policy will result in a FFDO.

#### Testing and Assessment

- A. Consult your schedule for major test dates. There may be multiple choice, matching, fill in the blank, essay and short-answer type questions.
- B. Assessment - Not all assignments will be assigned a grade but may be used for assessment purposes. All assignments are expected to be available for inspection.
- C. Homework may include the following: **You should expect homework regularly and look over notes and new material each day.**
  - Review to reinforce material presented in class
  - Worksheets involving reading techniques, critical thinking, and review
  - Reading Exercises
  - Internet research
  - Lab reports and lab evaluations

**D. Late homework - Not accepted. You will be allowed to make-up the work if the absence is excused. You must meet with me one day before or after the absence. It is your responsibility to do so.**

- E. Grades - The following weights apply:

|                                                    |     |
|----------------------------------------------------|-----|
| Homework                                           | 10% |
| Laboratory Work with Practical (5-100 pts ea.)     | 22% |
| Tests (60-100 pts. ea.) and Quizzes (5-30 pt. ea.) | 48% |
| Final exam                                         | 20% |

Semester grades are assigned as followed:

- A - 100 to 90%
- B - 89 to 80%
- C - 79 to 70%
- D - 69 to 60%
- F - Less than 60%

**Lab is Pass/Fail -100 % of the Laboratory grade consists of Lab Practicals. . Those failing the class will result in the failure of the lab. Those passing the lecture portion with a D or better will pass the lab portion of the class depending on lab grade.**

- F. Rubrics – The following criteria are assigned in rubrics for assessment purposes.

#### Final Exam NMMI Policy

At the end of each semester, a mandatory comprehensive final exam or project will be administered on the scheduled date, unless an exception is approved by the Academic Dean, and shall be given to all cadets, regardless of their grade in the course. It shall

account for no more than 25%, but no less than 15% of a student's final grade. [Note that the final exam weight for this course is 20%]

#### Absences, Late Work and Furlough Requests.

A. **Arrangements** for missed assignments relating to illness or emergencies must be made within two days upon returning to class. It is the responsibility of the student to arrange for make-up work outside of scheduled class times. The absence is excused the work is not.

**B. Arrangements for planned absences should be made BEFORE missing class.**

C. Make-up quizzes and tests are given only in the event of an excused absence. Make-up tests are given at 0715 in my office or by appointment. Failure to make up a test by the scheduled time may result in a zero for that test.

#### Academic Dishonesty

Cheating, assisting in cheating, plagiarizing or employing other forms of academic dishonesty will result in a grade of ZERO for the assignment or test for all parties involved. Be aware that Turn-it-in.com will be used to verify originality of papers. You are expected to work on graded assignments and write papers independently. Further, the incident will be reported to the Honor Board, the Commandant and the Dean using the procedure designated by the Dean. **Unauthorized use of electronic devices during assessments will result in a grade of "0" on the test or quiz.**

**ASK -- I'm here to help. I want you to succeed, but you are the one in charge of your education.**

#### Calendar

|                                   |                                                                                                                                                                      |                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Packaging and Storing of Evidence | Packaging and Storing of Material<br>Evidence Collection Techniques<br>Chain of Custody<br>-Legal Considerations of Crime Scene                                      | Week 1 and 2 and 3 |
| Trace Evidence                    | Collection and Processing of Hair, Fiber, Glass etc.                                                                                                                 | Week 4, 5,         |
| Fingerprints                      | Types of Fingerprints<br>Processing of Latent Fingerprints<br>Identifying Fingerprints<br>Superglue Fuming<br>Iodine Development                                     | Week 6             |
| Forensic Serology                 | The Nature of Blood<br>Immunoassay Techniques<br>Forensic Characterization of Bloodstains<br>Stain Patterns of Blood<br>Stringing<br>Calculating Area of Convergence | Week 7 and 8       |

|                                    |                                                                                         |                |
|------------------------------------|-----------------------------------------------------------------------------------------|----------------|
|                                    | Calculating Area of Origin                                                              |                |
| Presumptive vs. Confirmatory Tests | Luminol/BlueStar<br>Kastle-Meyer Testing<br>Microscopy<br>Confirmatory Test Kits in Lab | Week 9 and 10  |
| DNA<br>Enzymes<br>Proteins         | Electrophoresis<br>STR<br>PCR<br>RFLP<br>Identifying Suspect<br>Statistics              | Week 11 and 12 |
| Forensic Entomology                | Introduction to Forensic Entomology (Time Permitting)                                   | Week 13        |
| Forensic Toxicology                | Drug Identification                                                                     | Week 13        |

**Assessment Statement:**

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.

## Forensics Science I Lab

### NMMI Syllabus

**Semester:** Spring

**Year:** 2026

**Course number:** PHSC 1120L

LTC Norris  
"Ma'am"

Lab Tuesday  
McClure 009 or 205

Office: 209 McClure  
Ext. 8147

Office hours: 0715-10:00am

Check my office door for other available times.

I'm here to help whenever my door is open.

Class Information available using CANVAS

Email: [knorris@nmmt.edu](mailto:knorris@nmmt.edu)

### Meeting Times

|                           | M                                    | T                                    | W                                    | TH                                   | F                                    |
|---------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Tutoring<br>7:15-8:00     | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | No Office Hours                      | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 |
| 1 <sup>st</sup> 8:15-9:05 | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 2 <sup>nd</sup> 0910      |                                      |                                      |                                      |                                      |                                      |
| 3 <sup>rd</sup> 1005      | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 4 <sup>th</sup> 1100      | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 |
| Lunch                     | Lunch                                | Lunch                                | Lunch                                | Lunch                                | Lunch                                |
| 5 <sup>th</sup> 11:50     | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 6 <sup>th</sup> 1:45      | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             |
| 7 <sup>th</sup> 2:40      |                                      | PHSC 1120L<br>McClure 009 or 205     |                                      |                                      |                                      |

## Course Description

Forensic Science is the application of science to law. This lab component provides overview of the basic techniques utilized by forensic scientists in the lab in analyzing common types of physical evidence that includes analysis of fingerprints, fiber analysis, trace evidence, poisons, body fluids, DNA analysis, and blood spatters. Students are also taught the proper collection, preservation, and documentation of various samples. Once the evidence has been processed, the student will use critical thinking skills to interpret the evidence in the context of the case.

## Student Learning Outcomes

1. Develop and utilize skills of scientific inquiry, asking questions, gathering, analyzing and interpreting data, drawing conclusions, predicting, and communicating results.
2. Develop an awareness of forensic science issues that may impact learners and introduce the different techniques used to analyze a variety of crimes.
3. Evaluate information and interpret graphs and charts to make informed forensic science decisions.
4. Enhance academic skills including the use of electronic resources.

## Department Outcomes

- *Cadets will be able to demonstrate an understanding of core knowledge in the sciences.*
- *Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.*
- *Cadets will be able to apply the scientific method to solve problems.*
- *Cadets will be able to acquire and synthesize scientific information from a variety of sources.*
- *Cadets will be able to apply techniques and instrumentation to solve problems.*

*Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge*

Academic integrity – All students will show growth in sound ethical decision making by adhering to the values of service, integrity, and responsibility across the curriculum.

Problem solving – All students will increase their ability to use critical thinking and problem solving across the curriculum.

Leadership – All students will be provided opportunities in the classroom to model leadership during large and small group activities.

## Requisites for Lab: Enrollment in Forensics 1 (PHSC 1120)

### Procedures and Classroom Rules

**You will be asked to leave the laboratory if you are not being safe or productive.**

**Cell phone use in the classroom is authorized only when approved by the instructor for academic purposes. Please follow the posted Math and Science Division electronic device policy.**

### Expectations/Procedures

1. Prepare for class. Pen/Pencil Assignment of Day.

2. **No vulgarity.** This is not acceptable behavior. Any impolite words will not be allowed either.
3. I will give you a certain amount of time to finish notes when they are projected. No Computers will be allowed for note taking.
4. Water is allowed. No food or drink. You spill, you clean.
5. If you attend tutoring, it does not mean your assignment can be late.
6. Stay at your own lab area with assigned partners.
7. Use complete sentences when you hand in any work.
8. Lab misconduct will result in dismissal on first offense. You may not be allowed back if I see fit. Ex: Pushing, chemical mishandling. Do not yell across the room for my attention. I will be around the tables as time allows.

**Book: Introduction to Forensic Science and Criminalistics by R.E Gaensslen; Howard A. Harris; and Henry Lee. 1<sup>st</sup> Edition**  
**No lab Manual Required**

### **Grading Procedures.**

What you can look forward to...

- A. The course will cover selected chapters of the textbook. The text will be supplemented by discussions, group exercises, videos, and handouts.
- B. Laboratory: There will be one to two lab session per week.
- C. Tutoring – Tutoring is available in the morning at 7:15 except on Wed. Students with a D or F in the class should set up a tutoring schedule with me until the grade improves. **Improving your grade usually requires improvement in study habits and time management. Raising a grade through individual extra credit is not available.** Check my schedule for other available times.
- D. Computer Use - E-mail, CANVAS, and Internet assignments. –
  - a. Computers will be issued to cadets.
  - b. In case your computer is not working, computers are available each morning in Willson Hall on the main floor from 0715. These computers are also available during the day when there is an open computer. There are computers available on the main floor of the library and in the Writing Lab (evening NSH).
  - c. Make plans for computer-generated work if you do not have access to a computer in your room.
- E. Downloading programs from the Internet without permission is a violation of computer policy will result in a FFDO.

### **Testing and Assessment**

- A. Consult your schedule for major test dates. There may be multiple choice, matching, fill in the blank, essay and short-answer type questions.
- B. Quizzes may be announced or unannounced, be prepared.
- C. Assessment - Not all assignments will be assigned a grade but may be used for assessment purposes. All assignments are expected to be available for inspection.
- D. Homework may include the following: **You should expect homework regularly and look over notes and new material each day.**
  - Review to reinforce material presented in class
  - Worksheets involving reading techniques, critical thinking, and review

Concept Mapping  
 Reading Exercises  
 Internet research  
 Lab reports and lab evaluations

**E. Late homework - Not accepted. You will be allowed to make-up the work if the absence is excused. You must meet with me one day before or after the absence. It is your responsibility to do so.**

F. Course Grades - The following weights apply:

|                                                    |     |
|----------------------------------------------------|-----|
| Homework                                           | 10% |
| Laboratory Work with Practical (5-100 pts ea.)     | 22% |
| Tests (60-100 pts. ea.) and Quizzes (5-30 pt. ea.) | 48% |
| Final exam                                         | 20% |
| Semester grades are assigned as followed:          |     |
| A - 100 to 90%                                     |     |
| B - 89 to 80%                                      |     |
| C - 79 to 70%                                      |     |
| D - 69 to 60%                                      |     |
| F - Less than 60%                                  |     |

**Lab is Pass/Fail -100 % of the Laboratory grade consists of Lab practicals. Those failing the class will result in the failure of the lab. Those passing the lecture portion with a D or better will pass the lab portion of the class if lab grade permits.**

G. Rubrics – The following criteria are assigned in rubrics for assessment purposes.

#### Final Exam NMCI Policy

At the end of each semester, a mandatory comprehensive final exam or project will be administered on the scheduled date, unless an exception is approved by the Academic Dean, and shall be given to all cadets, regardless of their grade in the course. It shall account for no more than 25%, but no less than 15% of a student's final grade. [Note that the final exam weight for this course is 20%]

#### Absences, Late Work and Furlough Requests.

- A. **Arrangements** for missed assignments relating to illness or emergencies must be made within two days upon returning to class. It is the responsibility of the student to arrange for make-up work outside of scheduled class times. The absence is excused the work is not.
- B. Arrangements for planned absences should be made BEFORE missing class.**
- C. Make-up quizzes and tests are given only in the event of an excused absence. Make-up tests are given at 0715 in my office or by appointment. Failure to make up a test by the scheduled time may result in a zero for that test.

#### Academic Dishonesty

Cheating, assisting in cheating, plagiarizing or employing other forms of academic dishonesty will result in a grade of ZERO for the assignment or test for all parties involved. Be aware that Turn-it-in.com will be used to verify originality of papers. You



are expected to work on graded assignments and write papers independently. Further, the incident will be reported to the Honor Board, the Commandant and the Dean using the procedure designated by the Dean. **Unauthorized use of electronic devices during assessments will result in a grade of “0” on the test or quiz.**

**ASK -- I’m here to help. I want you to succeed, but you are the one in charge of your education.**

#### Calendar

|                                    |                                                                                                                                                                                                 |                                                                                |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Packaging and Storing of Evidence  | Packaging and Storing of Material<br>Evidence Collection Techniques<br>Chain of Custody<br>-Legal Considerations of Crime Scene                                                                 | Week 1 and 2 and 3<br>Lab: Smooth Sketch<br>Lab: Packaging Preserving Material |
| Trace Evidence                     | Collection and Processing of Hair, Fiber, Glass etc.                                                                                                                                            | Week 4, 5,<br>Lab: Hair Lab                                                    |
| Fingerprints                       | Types of Fingerprints<br>Processing of Latent Fingerprints<br>Identifying Fingerprints<br>Superglue Fuming<br>Iodine Development                                                                | Week 6<br>Lab Fingerprints Lab                                                 |
| Forensic Serology                  | The Nature of Blood<br>Immunoassay Techniques<br>Forensic Characterization of Bloodstains<br>Stain Patterns of Blood Stringing<br>Calculating Area of Convergence<br>Calculating Area of Origin | Week 7 and 8<br>Lab: Calculating Point of Origin                               |
| Presumptive vs. Confirmatory Tests | Luminol/BlueStar<br>Kastle-Meyer Testing<br>Microscopy<br>Confirmatory Test Kits in Lab                                                                                                         | Week 9 and 10<br>Lab: Presumptive Tests.                                       |
| DNA<br>Enzymes<br>Proteins         | Electrophoresis<br>STR<br>PCR<br>RFLP<br>Identifying Suspect<br>Statistics                                                                                                                      | Week 11 and 12<br>Lab: Electrophoresis                                         |
| Forensic Entomology                | Introduction to Forensic Entomology (Time Permitting)                                                                                                                                           | Week 13                                                                        |
| Forensic Toxicology                | Drug Detecting                                                                                                                                                                                  | Week 14<br>Lab Drug Identification                                             |

**Assessment Statement:**

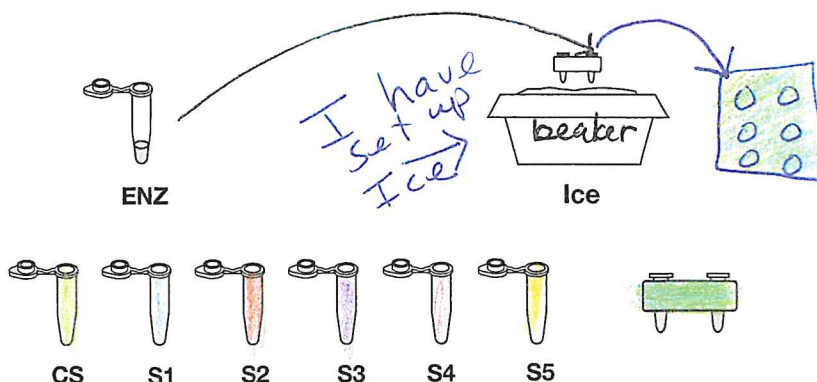
In fulfilling NMMI's assessment program, all students will be required to complete a variety of feedback tools to provide information to instructors on the efficacy of courses. NMMI expects students to provide honest and thoughtful answers to these assessment tools.

# Forensic DNA Fingerprinting Kit Quick Guide

## Lesson 1 Restriction Digestion

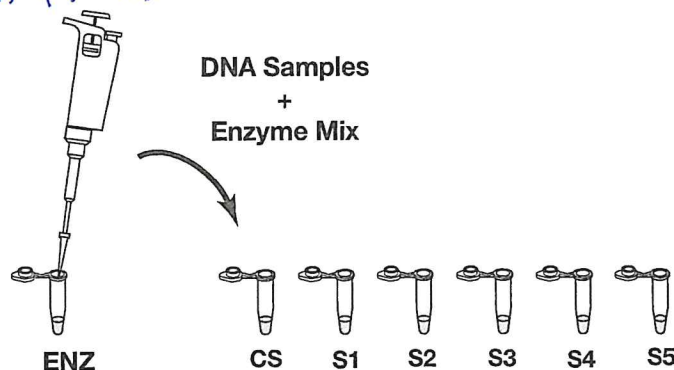
1. Place the tube containing the restriction enzyme mix, labeled ENZ, *in green float*
2. Label one of each colored microcentrifuge tubes as follows:
 

|             |                         |
|-------------|-------------------------|
| green tube  | <b>CS</b> (crime scene) |
| blue tube   | <b>S1</b> (suspect 1)   |
| orange tube | <b>S2</b> (suspect 2)   |
| violet tube | <b>S3</b> (suspect 3)   |
| pink tube   | <b>S4</b> (suspect 4)   |
| yellow tube | <b>S5</b> (suspect 5)   |

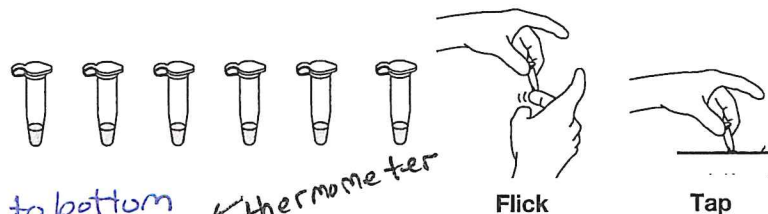


Label the tubes with your name, date, and lab period. Place the tubes in your microcentrifuge tube rack. *(green float)*

3. Using a fresh tip for each sample, pipet 10  $\mu$ l of each DNA sample from the stock tubes and transfer to the corresponding colored microcentrifuge tubes. Make sure the sample is transferred to the bottom of the tubes.
4. Pipet 10  $\mu$ l of enzyme mix (ENZ) into the very bottom of each tube. Use a fresh tip to transfer the ENZ sample to each tube. Pipet up and down carefully to mix well.

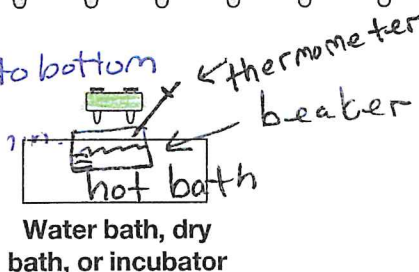


5. Tightly cap the tubes and mix the components by gently flicking the tubes with your finger.



gently tap the tube on the table top. *to get liquid to bottom of tube*

6. Incubate the tubes for 25 min at 37°C

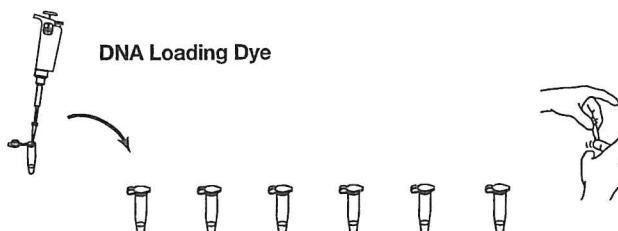


## Lesson 2 Agarose Gel Electrophoresis



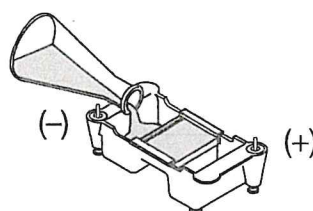
2. Bring all of the liquid into the bottom of the tube or gently tap on the table top.

3. Using a separate tip for each sample, add 5  $\mu$ l of loading dye "LD" into each tube. Cap the tubes and mix by gently flicking the tube with your finger. Collect the sample at the bottom of the tube by tapping it gently on the table or by pulse-spinning in a centrifuge.



4. Remove the agarose gel from the refrigerator (if applicable) and remove the plastic wrap. *(ask me to get gel)*

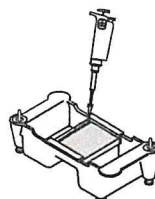
5. Place the agarose gel in the electrophoresis apparatus. Fill the electrophoresis chamber with 1x TAE buffer\* to cover the gel, using approximately 275 ml of buffer for a Bio-Rad Mini-Sub Cell, horizontal electrophoresis chamber.



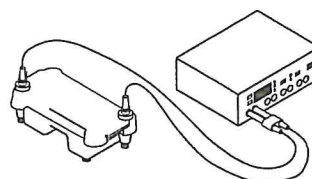
6. Check that the wells of the agarose gels are near the black (-) electrode and the bottom edge of the gel is near the red (+) electrode.

7. Using a separate tip for each sample, load the indicated volume of each sample into 7 wells of the gel in the following order:

- Lane 1: **S**, DNA size standard, 10  $\mu$ l
- Lane 2: **CS**, green tube, 20  $\mu$ l
- Lane 3: **S1**, blue tube, 20  $\mu$ l
- Lane 4: **S2**, orange tube, 20  $\mu$ l
- Lane 5: **S3**, violet tube, 20  $\mu$ l
- Lane 6: **S4**, red tube, 20  $\mu$ l
- Lane 7: **S5**, yellow tube, 20  $\mu$ l



8. Carefully place the lid on the electrophoresis chamber. The lid will attach to the base in only one orientation. The red and black jacks on the lid of the horizontal electrophoresis chambers will match with the red and black jacks on the base. Plug the electrodes into the power supply, red to red and black to black.



9. Turn on the power and electrophorese your samples at 100 V for 30 minutes.

\* or 0.25x TAE if using the Fast Gel Protocol

QUICK GUIDE

*Turn on  
by pressing  
running Man*

Student Manual



## Visualization of DNA Fragments

1. When the electrophoresis run is complete, turn off the power and remove the top of the chamber. Carefully remove the gel and tray from the gel box. Be careful — the gel is very slippery. Slide the gel into the staining tray.

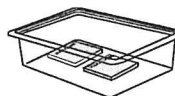


*Do Overnight Staining*

2. You have two options for staining your gel:

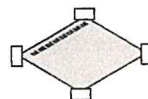
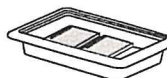
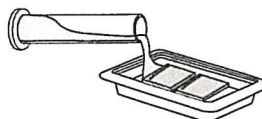
### ~~Quick staining (requires 12–15 minutes)~~

- a. Add 120 ml of **100x** Fast Blast DNA stain into a staining tray (2 gels per tray).
- b. Stain the gels for 2 minutes with gentle agitation. Save the used stain for future use.
- c. Transfer the gels into a large washing container and rinse with warm (40–55°C) tap water for approximately 10 seconds.
- d. Destain by washing twice in warm tap water for 5 minutes each with gentle shaking for best results.
- e. Record results.
- f. Trim away any unloaded lanes.
- g. Air-dry the gel on gel support film and tape the dried gel into your laboratory notebook.



### Overnight staining

- a. Add 120 ml of **1x** Fast Blast DNA stain to a staining tray (2 gels per tray).
- b. Let the gels stain overnight, with gentle shaking for best results. No destaining is required.
- c. Pour off the stain into a waste beaker.
- d. Record results.
- e. Trim away any unloaded lanes.
- f. Air-dry the gel on gel support film and tape the dried gel into your laboratory notebook.



*g. Come in tomorrow  
for a bit to take  
pic for LAB questions.*



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5790                              |
| Institution        | NMMI                              |
| Applicant(s)       | yang@nmmi.edu                     |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-01-22 11:56 AM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Orlando Griego

---

### Chief Academic Officer Email

ogriego@nmmi.edu

---

### Registrar Name

Nekeya Bertrand

---

### Registrar Email

bertrand@nmmi.edu

---

### Course's Academic Department

Science department

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

PHSC

---

### Number

1120L

---

### Title

FORENSIC SCIENCE I lab

---

### Number of credits

0

---

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

No

---

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

Yes

## Co-requisite Course

---

### Prefix

PHSC

---

### Number

1120

---

### Title

FORENSIC SCIENCE I

## New Mexico Common Course Information

---

### Prefix

PHSC

---

### Number

1120L

---

### Title

FORENSIC SCIENCE I lab

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility



## Section B. Learning Outcomes

---

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

#### Student Learning Outcomes

Upon completion of this course, students will have an understanding of:

1. Developing and utilizing skills of scientific inquiry, asking questions, gathering, analyzing and interpreting data, drawing conclusions, predicting, and communicating results.
  2. Developing and awareness of forensic science issues that may impact learners and introduce the different techniques used to analyze a variety of crimes.
  3. The history and development of forensic sciences.
  4. The proper procedures for collecting, preserving, and documenting physical evidence.
  5. The handling, value, and capabilities of DNA evidence.
  6. The various types and analysis methods of physical and trace evidence.
  7. Serology and blood spatter analysis.
- 

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

#### Student Learning Outcomes

Upon completion of this course, students will have an understanding of:

1. Developing and utilizing skills of scientific inquiry, asking questions, gathering, analyzing and interpreting data, drawing conclusions, predicting, and communicating results.
2. Developing and awareness of forensic science issues that may impact learners and introduce the different techniques used to analyze a variety of crimes.
3. The history and development of forensic sciences.
4. The proper procedures for collecting, preserving, and documenting physical evidence.
5. The handling, value, and capabilities of DNA evidence.
6. The various types and analysis methods of physical and trace evidence.
7. Serology and blood spatter analysis.

#### Department Outcomes

Cadets will be able to demonstrate an understanding of core knowledge in the sciences.

Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.

Cadets will be able to apply the scientific method to solve problems.

Cadets will be able to acquire and synthesize scientific information from a variety of sources.

Cadets will be able to apply techniques and instrumentation to solve problems.

Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge

## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

In the lab portion of Forensic Science I, students are given a real-life crime scene problem for each laboratory session. For instance, how would they gather real life fluid from the scene as a professional would of course using the correct technique and how to collect it safely. They have to collect physical evidence properly to receive credit. They have to know how to read the results of the test that they have conducted. They have to provide a conclusion within their laboratory report as to how they achieved their way to what they think their proper conclusion should be.

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

To satisfy the Quantitative component in the laboratory portion of Forensic Science I, we use mathematical components in most of our laboratory sessions. We use rulers to measure evidence, graph paper for scaling of physical evidence, bar graphs or line graphs to represent DNA evidence. Calculators to perform Trigonometric functions when reading blood patterns. We present models from Geometry to evaluate blood reading patterns, and we use graph paper to represent a model of a scene. Students must know how to interpret the data that they collect to read the crime scene correctly and get the most appropriate data that they can, and they must know that there is always error in their data.

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

In the lab for Forensic Science I, the students must work in pairs. Most students working in lab are from different cultures. They must learn how to get along with all cultures and be friendly in lab sessions. We work under the safest humanitarian conditions possible because that is how students learn the best. They have to remain calm and nice to each other. They must be polite to one another and speak to each other as such. They must value the input of the other student and allow the other student to contribute. For instance, if one partner is better at developing the evidence, they can learn from that partner. They can collaborate and use both skill sets to develop crime scene data while learning how to work in a professional environment.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.nmmi.edu/wp-content/uploads/2022/11/ACADEMIC-ASSESSMENT-PLAN.pdf)

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

# Application History

| Type          | username      | Text                                                       | Timestamp                          |
|---------------|---------------|------------------------------------------------------------|------------------------------------|
| Submittal     | yang@nmml.edu | Submitted by yang@nmml.edu                                 | 2026-01-22 11:56 AM (US /Mountain) |
| Authorization | yang@nmml.edu | yang@nmml.edu has authorized the application for submittal | 2026-01-22 11:56 AM (US /Mountain) |
| Created       | yang@nmml.edu | Application started by yang@nmml.edu                       | 2026-01-22 11:42 AM (US /Mountain) |

# Forensics Science 1

## NMMI Syllabus

**Semester:** Spring

**Year:** 2026

**Course number:** PHSC 1120

Major Norris

"Ma'am"

Room 009 McClure

MWF

Office: 209 McClure

Ext. 8147

Office hours: 7:15 am-10:00am

Check my office door for other available times.

I'm here to help whenever my door is open.

Class Information available using CANVAS

Email: [knorris@nmmt.edu](mailto:knorris@nmmt.edu)

## Meeting Times

|                           | M                                    | T                                    | W                                    | TH                                   | F                                    |
|---------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Tutoring<br>7:15-8:00     | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | No Office Hours                      | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 |
| 1 <sup>st</sup> 8:15-9:05 | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 2 <sup>nd</sup> 0910      |                                      |                                      |                                      |                                      |                                      |
| 3 <sup>rd</sup> 1005      | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 4 <sup>th</sup> 1100      | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 |
| 5 <sup>th</sup> 11:50     | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 6 <sup>th</sup> 1:45      | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             |
| 7 <sup>th</sup> 2:40      |                                      | PHSC 1120L<br>McClure 009 or 205     |                                      |                                      |                                      |

## Course Description

An introduction to forensic science, emphasizing the multi-disciplinary approach required to document, understand, and solve forensic problems. Topics for this course include those on general science and applying scientific methods to answer questions of interest to the legal system. Case studies will be used to illustrate how science was used to solve crimes.

### Course Outcomes

Upon satisfactory completion of Forensics, NMMI cadets will be able to:

1. Develop and utilize skills of scientific inquiry, asking questions, gathering, analyzing and interpreting data, drawing conclusions, predicting, and communicating results.
2. Develop and awareness of forensic science issues that may impact learners and introduce the different techniques used to analyze a variety of crimes.
3. Evaluate information and interpret graphs and charts to make informed forensic science decisions.
4. Enhance academic skills including the use of electronic resources.

### Department Outcomes

- *Cadets will be able to demonstrate an understanding of core knowledge in the sciences.*
  - *Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.*
  - *Cadets will be able to apply the scientific method to solve problems.*
  - *Cadets will be able to acquire and synthesize scientific information from a variety of sources.*
  - *Cadets will be able to apply techniques and instrumentation to solve problems.*
- Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge*

### NMMI School Target Goals

Academic integrity – All students will show growth in sound ethical decision making by adhering to the values of service, integrity, and responsibility across the curriculum.

Problem solving – All students will increase their ability to use critical thinking and problem solving across the curriculum.

Leadership – All students will be provided opportunities in the classroom to model leadership during large and small group activities.

**Requisites for class: Enrollment in Forensics I Lab (PHSC 1120L)**

## Procedures and Classroom Rules

**You will be asked to leave the laboratory if you are not being safe or productive.**

**Cell phone use in the classroom is authorized only when approved by the instructor for academic purposes. Please follow the posted Math and Science Division electronic device policy.**

### Expectations/Procedures

1. Take your seat and prepare for class. Pen/Pencil Assignment of Day.
2. **No vulgarity.** This is not acceptable behavior. Any impolite words will not be allowed either.
3. I will give you a certain amount of time to finish notes when they are projected.  
No Computers will be allowed for note taking.
4. Water is allowed. No food or drink. You spill, you clean.
5. If you attend tutoring, it does not mean your assignment can be late.
6. Stay at your own lab area with assigned partners.
7. Use complete sentences when you hand in any work.
8. Lab misconduct will result in dismissal on first offense. You may not be allowed back if I see fit. Ex: Pushing, chemical mishandling. Do not yell across the room for my attention. I will be around the tables as time allows.

**Book: Introduction to Forensic Science and Criminalistics by R.E Gaensslen; Howard A. Harris; and Henry Lee. 1<sup>st</sup> Edition**  
**No lab Manual Required**

### Grading Procedures.

What you can look forward to...

- A. The course will cover selected chapters of the textbook. The text will be supplemented by discussions, group exercises, videos, and handouts.
- B. Laboratory: There will be one to two lab sessions per week.
- C. Tutoring – Tutoring is available in the morning at 7:15 except on Wed. Students with a D or F in the class should set up a tutoring schedule with me until the grade improves. **Improving your grade usually requires improvement in study habits and time management. Raising a grade through individual extra credit is not available.**  
Check my schedule for other available times.
- D. Computer Use - E-mail, CANVAS, and Internet assignments. –
  - a. Computers will be issued to cadets.
  - b. In case your computer is not working, computers are available each morning in Willson Hall on the main floor from 0715. These computers are also

available during the day when there is an open computer. There are computers available on the main floor of the library and in the Writing Lab (evening NSH).

- c. Make plans for computer-generated work if you do not have access to a computer in your room.
- E. Downloading programs from the Internet without permission is a violation of computer policy will result in a FFDO.

#### Testing and Assessment

- A. Consult your schedule for major test dates. There may be multiple choice, matching, fill in the blank, essay and short-answer type questions.
- B. Assessment - Not all assignments will be assigned a grade but may be used for assessment purposes. All assignments are expected to be available for inspection.
- C. Homework may include the following: **You should expect homework regularly and look over notes and new material each day.**
  - Review to reinforce material presented in class
  - Worksheets involving reading techniques, critical thinking, and review
  - Reading Exercises
  - Internet research
  - Lab reports and lab evaluations

**D. Late homework - Not accepted. You will be allowed to make-up the work if the absence is excused. You must meet with me one day before or after the absence. It is your responsibility to do so.**

- E. Grades - The following weights apply:

|                                                    |     |
|----------------------------------------------------|-----|
| Homework                                           | 10% |
| Laboratory Work with Practical (5-100 pts ea.)     | 22% |
| Tests (60-100 pts. ea.) and Quizzes (5-30 pt. ea.) | 48% |
| Final exam                                         | 20% |

Semester grades are assigned as followed:

- A - 100 to 90%
- B - 89 to 80%
- C - 79 to 70%
- D - 69 to 60%
- F - Less than 60%

**Lab is Pass/Fail -100 % of the Laboratory grade consists of Lab Practicals. . Those failing the class will result in the failure of the lab. Those passing the lecture portion with a D or better will pass the lab portion of the class depending on lab grade.**

- F. Rubrics – The following criteria are assigned in rubrics for assessment purposes.

#### Final Exam NMMI Policy

At the end of each semester, a mandatory comprehensive final exam or project will be administered on the scheduled date, unless an exception is approved by the Academic Dean, and shall be given to all cadets, regardless of their grade in the course. It shall



account for no more than 25%, but no less than 15% of a student's final grade. [Note that the final exam weight for this course is 20%]

#### Absences, Late Work and Furlough Requests.

A. **Arrangements** for missed assignments relating to illness or emergencies must be made within two days upon returning to class. It is the responsibility of the student to arrange for make-up work outside of scheduled class times. The absence is excused the work is not.

**B. Arrangements for planned absences should be made BEFORE missing class.**

C. Make-up quizzes and tests are given only in the event of an excused absence. Make-up tests are given at 0715 in my office or by appointment. Failure to make up a test by the scheduled time may result in a zero for that test.

#### Academic Dishonesty

Cheating, assisting in cheating, plagiarizing or employing other forms of academic dishonesty will result in a grade of ZERO for the assignment or test for all parties involved. Be aware that Turn-it-in.com will be used to verify originality of papers. You are expected to work on graded assignments and write papers independently. Further, the incident will be reported to the Honor Board, the Commandant and the Dean using the procedure designated by the Dean. **Unauthorized use of electronic devices during assessments will result in a grade of "0" on the test or quiz.**

**ASK -- I'm here to help. I want you to succeed, but you are the one in charge of your education.**

#### Calendar

|                                   |                                                                                                                                                                      |                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Packaging and Storing of Evidence | Packaging and Storing of Material<br>Evidence Collection Techniques<br>Chain of Custody<br>-Legal Considerations of Crime Scene                                      | Week 1 and 2 and 3 |
| Trace Evidence                    | Collection and Processing of Hair, Fiber, Glass etc.                                                                                                                 | Week 4, 5,         |
| Fingerprints                      | Types of Fingerprints<br>Processing of Latent Fingerprints<br>Identifying Fingerprints<br>Superglue Fuming<br>Iodine Development                                     | Week 6             |
| Forensic Serology                 | The Nature of Blood<br>Immunoassay Techniques<br>Forensic Characterization of Bloodstains<br>Stain Patterns of Blood<br>Stringing<br>Calculating Area of Convergence | Week 7 and 8       |

|                                    |                                                                                         |                |
|------------------------------------|-----------------------------------------------------------------------------------------|----------------|
|                                    | Calculating Area of Origin                                                              |                |
| Presumptive vs. Confirmatory Tests | Luminol/BlueStar<br>Kastle-Meyer Testing<br>Microscopy<br>Confirmatory Test Kits in Lab | Week 9 and 10  |
| DNA<br>Enzymes<br>Proteins         | Electrophoresis<br>STR<br>PCR<br>RFLP<br>Identifying Suspect<br>Statistics              | Week 11 and 12 |
| Forensic Entomology                | Introduction to Forensic Entomology (Time Permitting)                                   | Week 13        |
| Forensic Toxicology                | Drug Identification                                                                     | Week 13        |

**Assessment Statement:**

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.

## Forensics Science I Lab

### NMMI Syllabus

**Semester:** Spring

**Year:** 2026

**Course number:** PHSC 1120L

LTC Norris  
"Ma'am"

Lab Tuesday  
McClure 009 or 205

Office: 209 McClure  
Ext. 8147

Office hours: 0715-10:00am

Check my office door for other available times.

I'm here to help whenever my door is open.

Class Information available using CANVAS

Email: [knorris@nmmt.edu](mailto:knorris@nmmt.edu)

### Meeting Times

|                           | M                                    | T                                    | W                                    | TH                                   | F                                    |
|---------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Tutoring<br>7:15-8:00     | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | No Office Hours                      | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 |
| 1 <sup>st</sup> 8:15-9:05 | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 2 <sup>nd</sup> 0910      |                                      |                                      |                                      |                                      |                                      |
| 3 <sup>rd</sup> 1005      | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 4 <sup>th</sup> 1100      | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 | Office Hours<br>M 009<br>Or<br>M 209 |
| Lunch                     | Lunch                                | Lunch                                | Lunch                                | Lunch                                | Lunch                                |
| 5 <sup>th</sup> 11:50     | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           | Biology 022<br>McClure 009           |
| 6 <sup>th</sup> 1:45      | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             | PHSC 1120<br>McClure 009             |
| 7 <sup>th</sup> 2:40      |                                      | PHSC 1120L<br>McClure 009 or 205     |                                      |                                      |                                      |

## Course Description

Forensic Science is the application of science to law. This lab component provides overview of the basic techniques utilized by forensic scientists in the lab in analyzing common types of physical evidence that includes analysis of fingerprints, fiber analysis, trace evidence, poisons, body fluids, DNA analysis, and blood spatters. Students are also taught the proper collection, preservation, and documentation of various samples. Once the evidence has been processed, the student will use critical thinking skills to interpret the evidence in the context of the case.

## Student Learning Outcomes

Upon completion of this course, students will have an understanding of:

1. Developing and utilizing skills of scientific inquiry, asking questions, gathering, analyzing and interpreting data, drawing conclusions, predicting, and communicating results.
2. Developing and awareness of forensic science issues that may impact learners and introduce the different techniques used to analyze a variety of crimes.
3. The history and development of forensic sciences.
4. The proper procedures for collecting, preserving, and documenting physical evidence.
5. The handling, value, and capabilities of DNA evidence.
6. The various types and analysis methods of physical and trace evidence.
7. Serology and blood spatter analysis.

## Department Outcomes

- *Cadets will be able to demonstrate an understanding of core knowledge in the sciences.*
- *Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.*
- *Cadets will be able to apply the scientific method to solve problems.*
- *Cadets will be able to acquire and synthesize scientific information from a variety of sources.*
- *Cadets will be able to apply techniques and instrumentation to solve problems.*
- *Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge*

Academic integrity – All students will show growth in sound ethical decision making by adhering to the values of service, integrity, and responsibility across the curriculum. Problem solving – All students will increase their ability to use critical thinking and problem solving across the curriculum.

Leadership – All students will be provided opportunities in the classroom to model leadership during large and small group activities.

## Requisites for Lab: Enrollment in Forensics 1 (PHSC 1120)

### Procedures and Classroom Rules

**You will be asked to leave the laboratory if you are not being safe or productive.**

**Cell phone use in the classroom is authorized only when approved by the instructor for academic purposes. Please follow the posted Math and Science Division electronic device policy.**

### Expectations/Procedures

1. Prepare for class. Pen/Pencil Assignment of Day.

2. **No vulgarity.** This is not acceptable behavior. Any impolite words will not be allowed either.
3. I will give you a certain amount of time to finish notes when they are projected. No Computers will be allowed for note taking.
4. Water is allowed. No food or drink. You spill, you clean.
5. If you attend tutoring, it does not mean your assignment can be late.
6. Stay at your own lab area with assigned partners.
7. Use complete sentences when you hand in any work.
8. Lab misconduct will result in dismissal on first offense. You may not be allowed back if I see fit. Ex: Pushing, chemical mishandling. Do not yell across the room for my attention. I will be around the tables as time allows.

**Book: Introduction to Forensic Science and Criminalistics by R.E Gaensslen; Howard A. Harris; and Henry Lee. 1<sup>st</sup> Edition**  
**No lab Manual Required**

### **Grading Procedures.**

What you can look forward to...

- A. The course will cover selected chapters of the textbook. The text will be supplemented by discussions, group exercises, videos, and handouts.
- B. Laboratory: There will be one to two lab session per week.
- C. Tutoring – Tutoring is available in the morning at 7:15 except on Wed. Students with a D or F in the class should set up a tutoring schedule with me until the grade improves. **Improving your grade usually requires improvement in study habits and time management. Raising a grade through individual extra credit is not available.** Check my schedule for other available times.
- D. Computer Use - E-mail, CANVAS, and Internet assignments. –
  - a. Computers will be issued to cadets.
  - b. In case your computer is not working, computers are available each morning in Willson Hall on the main floor from 0715. These computers are also available during the day when there is an open computer. There are computers available on the main floor of the library and in the Writing Lab (evening NSH).
  - c. Make plans for computer-generated work if you do not have access to a computer in your room.
- E. Downloading programs from the Internet without permission is a violation of computer policy will result in a FFDO.

### **Testing and Assessment**

- A. Consult your schedule for major test dates. There may be multiple choice, matching, fill in the blank, essay and short-answer type questions.
- B. Quizzes may be announced or unannounced, be prepared.
- C. Assessment - Not all assignments will be assigned a grade but may be used for assessment purposes. All assignments are expected to be available for inspection.
- D. Homework may include the following: **You should expect homework regularly and look over notes and new material each day.**
  - Review to reinforce material presented in class
  - Worksheets involving reading techniques, critical thinking, and review

Concept Mapping  
 Reading Exercises  
 Internet research  
 Lab reports and lab evaluations

**E. Late homework - Not accepted. You will be allowed to make-up the work if the absence is excused. You must meet with me one day before or after the absence. It is your responsibility to do so.**

F. Course Grades - The following weights apply:

|                                                    |     |
|----------------------------------------------------|-----|
| Homework                                           | 10% |
| Laboratory Work with Practical (5-100 pts ea.)     | 22% |
| Tests (60-100 pts. ea.) and Quizzes (5-30 pt. ea.) | 48% |
| Final exam                                         | 20% |
| Semester grades are assigned as followed:          |     |
| A - 100 to 90%                                     |     |
| B - 89 to 80%                                      |     |
| C - 79 to 70%                                      |     |
| D - 69 to 60%                                      |     |
| F - Less than 60%                                  |     |

**Lab is Pass/Fail -100 % of the Laboratory grade consists of Lab practicals. Those failing the class will result in the failure of the lab. Those passing the lecture portion with a D or better will pass the lab portion of the class if lab grade permits.**

G. Rubrics – The following criteria are assigned in rubrics for assessment purposes.

#### Final Exam NMCI Policy

At the end of each semester, a mandatory comprehensive final exam or project will be administered on the scheduled date, unless an exception is approved by the Academic Dean, and shall be given to all cadets, regardless of their grade in the course. It shall account for no more than 25%, but no less than 15% of a student's final grade. [Note that the final exam weight for this course is 20%]

#### Absences, Late Work and Furlough Requests.

- A. **Arrangements** for missed assignments relating to illness or emergencies must be made within two days upon returning to class. It is the responsibility of the student to arrange for make-up work outside of scheduled class times. The absence is excused the work is not.
- B. Arrangements for planned absences should be made BEFORE missing class.**
- C. Make-up quizzes and tests are given only in the event of an excused absence. Make-up tests are given at 0715 in my office or by appointment. Failure to make up a test by the scheduled time may result in a zero for that test.

#### Academic Dishonesty

Cheating, assisting in cheating, plagiarizing or employing other forms of academic dishonesty will result in a grade of ZERO for the assignment or test for all parties involved. Be aware that Turn-it-in.com will be used to verify originality of papers. You

are expected to work on graded assignments and write papers independently. Further, the incident will be reported to the Honor Board, the Commandant and the Dean using the procedure designated by the Dean. **Unauthorized use of electronic devices during assessments will result in a grade of “0” on the test or quiz.**

**ASK -- I’m here to help. I want you to succeed, but you are the one in charge of your education.**

#### Calendar

|                                    |                                                                                                                                                                                                 |                                                                                |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Packaging and Storing of Evidence  | Packaging and Storing of Material<br>Evidence Collection Techniques<br>Chain of Custody<br>-Legal Considerations of Crime Scene                                                                 | Week 1 and 2 and 3<br>Lab: Smooth Sketch<br>Lab: Packaging Preserving Material |
| Trace Evidence                     | Collection and Processing of Hair, Fiber, Glass etc.                                                                                                                                            | Week 4, 5,<br>Lab: Hair Lab                                                    |
| Fingerprints                       | Types of Fingerprints<br>Processing of Latent Fingerprints<br>Identifying Fingerprints<br>Superglue Fuming<br>Iodine Development                                                                | Week 6<br>Lab Fingerprints Lab                                                 |
| Forensic Serology                  | The Nature of Blood<br>Immunoassay Techniques<br>Forensic Characterization of Bloodstains<br>Stain Patterns of Blood Stringing<br>Calculating Area of Convergence<br>Calculating Area of Origin | Week 7 and 8<br>Lab: Calculating Point of Origin                               |
| Presumptive vs. Confirmatory Tests | Luminol/BlueStar<br>Kastle-Meyer Testing<br>Microscopy<br>Confirmatory Test Kits in Lab                                                                                                         | Week 9 and 10<br>Lab: Presumptive Tests.                                       |
| DNA<br>Enzymes<br>Proteins         | Electrophoresis<br>STR<br>PCR<br>RFLP<br>Identifying Suspect<br>Statistics                                                                                                                      | Week 11 and 12<br>Lab: Electrophoresis                                         |
| Forensic Entomology                | Introduction to Forensic Entomology (Time Permitting)                                                                                                                                           | Week 13                                                                        |
| Forensic Toxicology                | Drug Detecting                                                                                                                                                                                  | Week 14<br>Lab Drug Identification                                             |

**Assessment Statement:**

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.

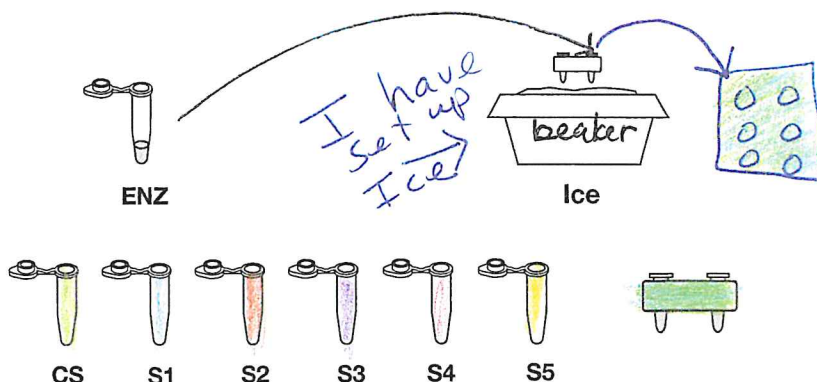


# Forensic DNA Fingerprinting Kit Quick Guide

## Lesson 1 Restriction Digestion

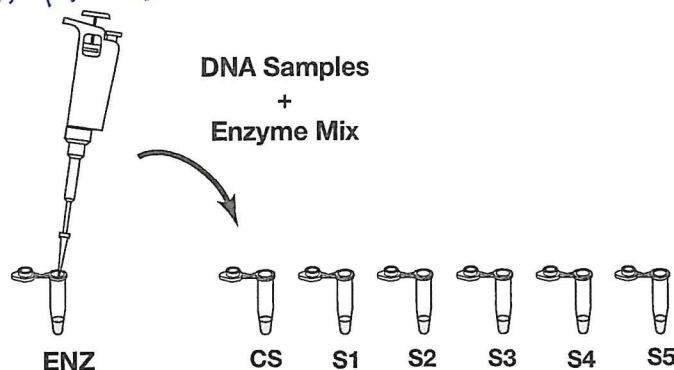
1. Place the tube containing the restriction enzyme mix, labeled ENZ, *in green float*
2. Label one of each colored microcentrifuge tubes as follows:
 

|             |                         |
|-------------|-------------------------|
| green tube  | <b>CS</b> (crime scene) |
| blue tube   | <b>S1</b> (suspect 1)   |
| orange tube | <b>S2</b> (suspect 2)   |
| violet tube | <b>S3</b> (suspect 3)   |
| pink tube   | <b>S4</b> (suspect 4)   |
| yellow tube | <b>S5</b> (suspect 5)   |

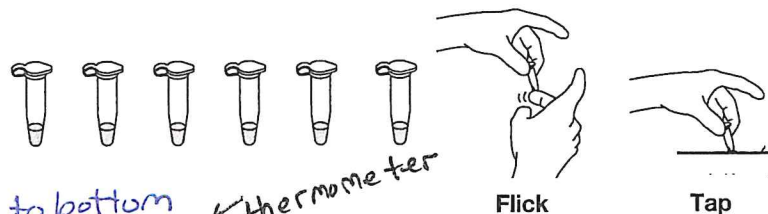


Label the tubes with your name, date, and lab period. Place the tubes in your microcentrifuge tube rack. *(green float)*

3. Using a fresh tip for each sample, pipet 10  $\mu$ l of each DNA sample from the stock tubes and transfer to the corresponding colored microcentrifuge tubes. Make sure the sample is transferred to the bottom of the tubes.
4. Pipet 10  $\mu$ l of enzyme mix (ENZ) into the very bottom of each tube. Use a fresh tip to transfer the ENZ sample to each tube. Pipet up and down carefully to mix well.

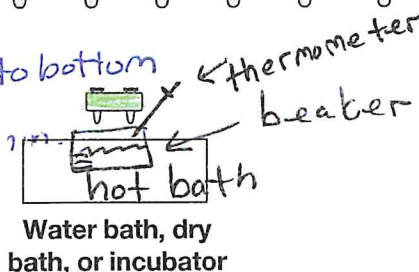


5. Tightly cap the tubes and mix the components by gently flicking the tubes with your finger.



gently tap the tube on the table top. *to get liquid to bottom of tube*

6. Incubate the tubes for 25 min at 37°C

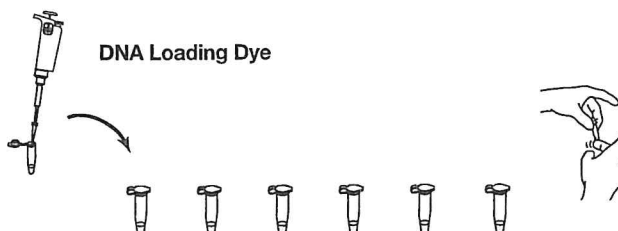


## Lesson 2 Agarose Gel Electrophoresis



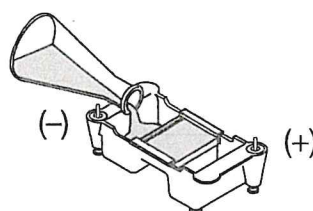
2. Bring all of the liquid into the bottom of the tube or gently tap on the table top.

3. Using a separate tip for each sample, add 5  $\mu$ l of loading dye "LD" into each tube. Cap the tubes and mix by gently flicking the tube with your finger. Collect the sample at the bottom of the tube by tapping it gently on the table or by pulse-spinning in a centrifuge.



4. Remove the agarose gel from the refrigerator (if applicable) and remove the plastic wrap. *(ask me to get gel)*

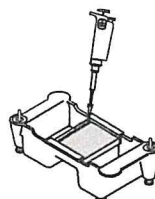
5. Place the agarose gel in the electrophoresis apparatus. Fill the electrophoresis chamber with 1x TAE buffer\* to cover the gel, using approximately 275 ml of buffer for a Bio-Rad Mini-Sub Cell, horizontal electrophoresis chamber.



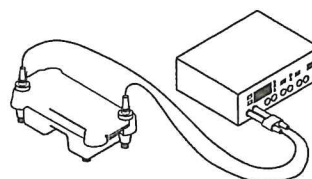
6. Check that the wells of the agarose gels are near the black (-) electrode and the bottom edge of the gel is near the red (+) electrode.

7. Using a separate tip for each sample, load the indicated volume of each sample into 7 wells of the gel in the following order:

- Lane 1: **S**, DNA size standard, 10  $\mu$ l
- Lane 2: **CS**, green tube, 20  $\mu$ l
- Lane 3: **S1**, blue tube, 20  $\mu$ l
- Lane 4: **S2**, orange tube, 20  $\mu$ l
- Lane 5: **S3**, violet tube, 20  $\mu$ l
- Lane 6: **S4**, red tube, 20  $\mu$ l
- Lane 7: **S5**, yellow tube, 20  $\mu$ l



8. Carefully place the lid on the electrophoresis chamber. The lid will attach to the base in only one orientation. The red and black jacks on the lid of the horizontal electrophoresis chambers will match with the red and black jacks on the base. Plug the electrodes into the power supply, red to red and black to black.



9. Turn on the power and electrophorese your samples at 100 V for 30 minutes.

\* or 0.25x TAE if using the Fast Gel Protocol

QUICK GUIDE

*Turn on  
by pressing  
running Man*

Student Manual



## Visualization of DNA Fragments

1. When the electrophoresis run is complete, turn off the power and remove the top of the chamber. Carefully remove the gel and tray from the gel box. Be careful — the gel is very slippery. Slide the gel into the staining tray.

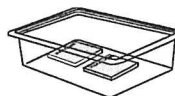


*Do Overnight Staining*

2. You have two options for staining your gel:

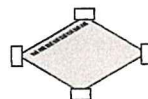
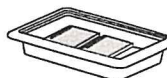
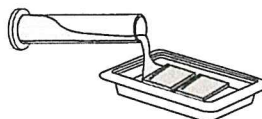
### ~~Quick staining (requires 12–15 minutes)~~

- ~~a. Add 120 ml of **100x** Fast Blast DNA stain into a staining tray (2 gels per tray).~~
- ~~b. Stain the gels for 2 minutes with gentle agitation. Save the used stain for future use.~~
- ~~c. Transfer the gels into a large washing container and rinse with warm (40–55°C) tap water for approximately 10 seconds.~~
- ~~d. Destain by washing twice in warm tap water for 5 minutes each with gentle shaking for best results.~~
- ~~e. Record results.~~
- ~~f. Trim away any unloaded lanes.~~
- ~~g. Air-dry the gel on gel support film and tape the dried gel into your laboratory notebook.~~



### Overnight staining

- a. Add 120 ml of **1x** Fast Blast DNA stain to a staining tray (2 gels per tray).
- b. Let the gels stain overnight, with gentle shaking for best results. No destaining is required.
- c. Pour off the stain into a waste beaker.
- d. Record results.
- e. Trim away any unloaded lanes.
- f. Air-dry the gel on gel support film and tape the dried gel into your laboratory notebook.



*g. Come in tomorrow  
for a bit to take  
pic for LAB questions.*



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5791                              |
| Institution        | NMMI                              |
| Applicant(s)       | yang@nmmi.edu                     |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-01-22 01:05 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Orlando Griego

---

### Chief Academic Officer Email

ogriego@nmmi.edu

---

### Registrar Name

Nekeya Bertrand

---

### Registrar Email

bertrand@nmmi.edu

---

### Course's Academic Department

Science department

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

PHYS

---

### Number

1112

---

### Title

Introductory Physics for the Health Sciences

---

### Number of credits

4

---

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

No

---

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

Yes

## Co-requisite Course

---

### Prefix

PHYS

---

### Number

1112L

---

### Title

Introductory Physics for the Health Sciences Lab

## New Mexico Common Course Information

---

### Prefix

PHYS

---

### Number

1112

---

### Title

Introductory Physics for the Health Sciences

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility



## Section B. Learning Outcomes

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

#### Student Learning Outcomes

1. The objective of the course is to familiarize the student with the concepts and methods used in the underlying physics associated with various Health Science disciplines.
2. The course will demonstrate how the basic principles of mechanics, thermodynamics, electricity, magnetism, electromagnetic waves and optics can be applied to solve particular problems in Health Sciences applications. Introduces the student to selected topics in modern physics including quantum physics, atomic and nuclear physics.

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

#### Course Outcomes:

A.

#### Student Learning Outcomes

1. The objective of the course is to familiarize the student with the concepts and methods used in the underlying physics associated with various Health Science disciplines.
2. The course will demonstrate how the basic principles of mechanics, thermodynamics, electricity, magnetism, electromagnetic waves and optics can be applied to solve particular problems in Health Sciences applications. Introduces the student to selected topics in modern physics including quantum physics, atomic and nuclear physics.

#### B. Optional Student Learning Outcomes

1. Apply quantum theory in simple situations such as the Bohr model of the atom, dual nature of light, atomic spectra.
2. Apply simple concepts of relativity.

#### Science Department Outcomes:

- A) Cadets will be able to demonstrate an understanding of core knowledge of the sciences.
- B) Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
- C) Cadets will be able to apply the scientific method to solve problems.
- D) Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
- E) Cadets will be able to acquire and synthesize scientific information from a variety of sources.
- F) Cadets will be able to apply techniques and instrumentation to solve problems.

## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

PHYS 1112 develops critical thinking by engaging students in the complete process of scientific reasoning within health science contexts. Students begin by setting problems grounded in real-world medical scenarios, such as diagnostic imaging, fluid flow in the human body, or the use of sound and radiation in healthcare. They identify relevant variables, constraints, and goals related to safety and accuracy. Students engage in evidence acquisition through laboratory experiments, data collection, and analysis of medical imaging examples including ultrasound, X-ray, CT, MRI, and PET. They then evaluate evidence by comparing results with expected physical principles, identifying sources of error, and assessing the limitations of measurement techniques and imaging methods. Finally, students apply reasoning and draw conclusions by using physics concepts to justify their interpretations in problem sets, lab reports, and exams. Emphasis is placed on explaining conclusions using evidence-based reasoning relevant to health science applications.

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

PHYS 1112 promotes quantitative reasoning through the use of algebra-based models and numerical analysis applied to health science technologies. Students communicate quantitative information using equations, graphs, tables, units, and diagrams, and clearly explain numerical results in written and verbal form. Students analyze quantitative arguments by examining relationships between variables, evaluating graphical trends, and determining whether numerical data support specific claims. Applications include wave behavior in ultrasound, fluid dynamics in blood flow, and radioactive decay in medical imaging. Students apply quantitative models to real-world scenarios using mathematical relationships related to motion, waves, electricity, magnetism, and radiation. These models are used to interpret and predict outcomes in technologies such as ECGs, EEGs, X-rays, CT scans, MRI, and PET imaging.

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

(Ethical Reasoning + Collaboration Skills)

PHYS 1112 supports personal and social responsibility through ethical reasoning and collaborative learning. Students examine ethical considerations related to the use of medical imaging technologies, including radiation exposure, patient safety, and the responsible application of diagnostic tools. These discussions emphasize informed decision-making and professional responsibility in healthcare settings. The course also develops collaboration and teamwork skills through laboratory and group activities. Students work together to collect data, analyze results, and interpret medical images, fostering communication, shared responsibility, and respect for evidence-based practices essential to health science professions.

## Section D. Assessment Plan

**[Link to Institution's General Education Assessment Plan](#)**

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





# Application History

| Type          | username      | Text                                                       | Timestamp                          |
|---------------|---------------|------------------------------------------------------------|------------------------------------|
| Submittal     | yang@nmml.edu | Submitted by yang@nmml.edu                                 | 2026-01-22 01:05 PM (US /Mountain) |
| Authorization | yang@nmml.edu | yang@nmml.edu has authorized the application for submittal | 2026-01-22 01:04 PM (US /Mountain) |
| Created       | yang@nmml.edu | Application started by yang@nmml.edu                       | 2026-01-22 12:57 PM (US /Mountain) |

## **NMMI Introductory Physics for Health Sciences Syllabus**

**Semester:** Spring

**Year:** 2026

**Course number:** PHYS 1112

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

Mon Wed & Fri 1005-1055 McClure 103

**Teacher Name:** Dr. Aonan Tang (COL)

**Email:** tang@nmmi.edu

**Phone:** (575)624-8169

**Office hours & Location:** 0910-1000 (MWF), McClure 103

### **Course Description:**

Algebra-level introduction to topics required for the Health Sciences including basic mechanics (including sound, mechanical waves and fluids), heat and thermodynamics, electricity and magnetism, optics and electromagnetic waves, atomic and nuclear physics and applications to medical imaging. Restricted to Community Colleges campuses only. Includes laboratory.

### **General scope of the course:**

Introduction of how to apply Physics in Medical area to diagnose and treat diseases.

### **Prerequisites or sequences:**

Intro-College Algebra or Higher

### **Course Outcomes:**

#### **A. Student Learning Outcomes**

1. The objective of the course is to familiarize the student with the concepts and methods used in the underlying physics associated with various Health Science disciplines.
2. The course will demonstrate how the basic principles of mechanics, thermodynamics, electricity, magnetism, electromagnetic waves and optics can be applied to solve particular problems in Health Sciences applications. Introduces the student to selected topics in modern physics including quantum physics, atomic and nuclear physics.

#### **B. Optional Student Learning Outcomes**

1. Apply quantum theory in simple situations such as the Bohr model of the atom, dual nature of light, atomic spectra.
2. Apply simple concepts of relativity.

### **Procedures and Classroom Rules:**

- Scientific Calculator, pencil & notebook. **You are required to take notes.**
- **NO LAPTOP OR CELLPHONE in the classroom.**
- **Homework is assigned once a week online. Absolutely no late homework unless an acceptable reason.**

- **The tests are accumulative tests. No test corrections. But bonus points will be assigned before the test. No test grades will be dropped at the end of the semester. But the final exam grade can replace one old test grade.**
- **Makeup lab, homework, quiz or test must be completed in a week after the absence.**
- **One quiz per chapter.** Quiz dates are not posted on the weekly schedule.
- **No change in final exam schedule due to the air ticket, car pool or other reasons.**
- **Every Monday night is the physics night at Wilson Hall. Dr. Tang will be there for the semester.**

### **Textbook:**

Instructor will provide the handouts

The Lab Manual will be provided to you at the beginning of the semester.

### **Attendance/Tardiness:**

1. Students are expected to attend all scheduled classes. Absences will be reported.
2. If you are going to be absent from class on a test day, the test must be taken prior to the absence or the test grade may be counted as a zero.
3. If the student has an excused absence, he/she will be responsible for turning in work due the day of absence as well as the current day's assignment on the day returning to class. If the student returns on a day of a test, the student is responsible for taking that test on that date.
4. An unexcused absence, will result in a "0" for homework due on that day.
5. If tardy, see me at the end of class to change the absent report (failure to see me to change the absent report will result in an "absent class stick" that may not be removed. Tardiness may be reported for disciplinary action. Reporting for tardy will not be removed.

### **Grading Procedures:**

- a) Homework will count for 15% of your course average.
- b) Labs will count 10% of your course average.
- c) Quiz will count 10% of your course average.
- d) Tests will count 40% of your course average.
- e) The final exam will be comprehensive in nature and counts as 20% of your final average.
- f) Class Participation and Behavior. This category will count 5 % towards your final average.
- g) *Grades.* Grades will be assigned according to the scale below:

|               |                |                |                |          |
|---------------|----------------|----------------|----------------|----------|
| 89.0 – 100% A | 79.0 – 88.9% B | 69.0 – 78.9% C | 60.0 – 68.9% D | <60.0% F |
|---------------|----------------|----------------|----------------|----------|

I do **NOT** accept late homework, lab reports, or extra credit except in the case of excused class absence on the day the assignment is due. **If you know that you will miss a test due to an athletic trip or for some other reason, then before the scheduled test date you must arrange**

**with me a time to take the test. Failure to make prior arrangement will result in a 0 on the test.** If a test or quiz is missed due to an excused absence, it will be made up the day you return to class. In case of an extended period of absence, you and I will confer on the makeup schedule.

#### **Science Department Outcomes:**

- A) Cadets will be able to demonstrate an understanding of core knowledge of the sciences.
- B) Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
- C) Cadets will be able to apply the scientific method to solve problems.
- D) Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
- E) Cadets will be able to acquire and synthesize scientific information from a variety of sources.
- F) Cadets will be able to apply techniques and instrumentation to solve problems.

#### **Final Exam Policy:**

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.

#### **Department/Division Policy on Academic Dishonesty:**

Cheating, assisting in cheating, or employing other types of academic dishonesty to any degree and in any form automatically results in a grade of ZERO on the entire assignment or test for all parties involved. Further, a grade of 'F' in that class for the semester may be given and the incident will be referred to the Commandant.

#### **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.

# January, 2026

| Sunday | Monday                                  | Tuesday | Wednesday                                                            | Thursday                                            | Friday                                     | Saturday |
|--------|-----------------------------------------|---------|----------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------|----------|
| 4      | 5                                       | 6       | 7                                                                    | 8                                                   | 9                                          | 10       |
| 11     | 12<br>Syllabus, course<br>introductions | 13      | 14<br>Chapter 1, basic<br>physics concepts                           | 15<br>No Labs                                       | 16<br>Chapter 1, basic<br>physics concepts | 17       |
| 18     | 19<br>No Class                          | 20      | 21<br>Chapter 2, Visible and<br>Infrared light                       | 22<br>Lab1: Experimental<br>Error and Data Analysis | 23<br>Chapter 2, Pulse<br>Oximeters        | 24       |
| 25     | 26<br>Chapter 2,<br>Thermodynamics      | 27      | 28<br>Chapter 2, Heart Beat<br>Monitor and Blood<br>Pressure Monitor | 29<br>Chapter 1 Test                                | 30<br>Chapter 3, Sound                     | 31       |

# February, 2026

| Sunday | Monday                 | Tuesday | Wednesday                  | Thursday                                               | Friday                                | Saturday |
|--------|------------------------|---------|----------------------------|--------------------------------------------------------|---------------------------------------|----------|
| 1      | 2<br>Chapter 3, Sound  | 3       | 4<br>Chapter 3, Ultrasound | 5<br>Lab2: Basic physical exams                        | 6<br>Chapter 3, Ultrasound Scans      | 7        |
| 8      | 9<br>Chapter 3, Fluid  | 10      | 11<br>Review Chapter 2-3   | 12<br>Lab3: How to use Ultrasound to diagnose diseases | 13<br>Chapter 4, EM Spectrum          | 14       |
| 15     | 16<br>No Class         | 17      | 18<br>No Class<br>JPA      | 19<br>Chapter 1-3 Test                                 | 20<br>Chapter 4, Background Radiation | 21       |
| 22     | 23<br>Chapter 4, X-ray | 24      | 25<br>Chapter 4, CT part 1 | 26<br>Lab4: X-ray & CT scan                            | 27<br>Chapter 4, CT part 2            | 28       |

---

# March, 2026

| Sunday | Monday                         | Tuesday            | Wednesday                            | Thursday                                   | Friday                     | Saturday |
|--------|--------------------------------|--------------------|--------------------------------------|--------------------------------------------|----------------------------|----------|
| 1      | 2<br>Chapter 5, CRO traces     | 3                  | 4<br>Chapter 5, ECGs                 | 5<br>Lab5: Read CT images                  | 6<br>Chapter 5, EEG        | 7        |
| 8      | 9<br>Review Chapter 4-5        | 10                 | 11<br>Chapter 6, Types of Radiations | 12<br>Chapter 1-5 Test                     | 13<br>Chapter 6, Half life | 14       |
| 15     | 16<br>Spring Break             | 17<br>Spring Break | 18<br>Spring Break                   | 19<br>Spring Break                         | 20<br>Spring Break         | 21       |
| 22     | 23<br>Chapter 6, Gamma Cameras | 24                 | 25<br>Chapter 7, Beta Decay          | 26<br>Lab6: tour to local medical facility | 27<br>Chapter 7, PET scan  | 28       |

---



# April, 2026

| Sunday | Monday                                     | Tuesday | Wednesday                            | Thursday                   | Friday                                           | Saturday |
|--------|--------------------------------------------|---------|--------------------------------------|----------------------------|--------------------------------------------------|----------|
| 29     | 30<br>Review Chapter 6-7                   | 31      | 1<br>Review Chapter 6-7              | 2<br>Chapter 1-7 Test      | 3<br>No Class                                    | 4        |
| 5      | 6<br>No Class                              | 7       | 8<br>Chapter 8, Radio waves          | 9<br>Lab7: Read PET image  | 10<br>Chapter 8,<br>Electromagnetic<br>induction | 11       |
| 12     | 13<br>Chapter 8, MRI part 1                | 14      | 15<br>Chapter 8, MRI part 2          | 16<br>Lab8: Read MRI image | 17<br>Chapter 8, Review                          | 18       |
| 19     | 20<br>Compare different<br>imaging methods | 21      | 22<br>Chapter 9, other<br>technology | 23<br>Lab9: Tour to ENMMC  | 24<br>Review Chapter 8-9                         | 25       |

May, 2026

| Sunday | Monday              | Tuesday          | Wednesday           | Thursday     | Friday                 | Saturday              |
|--------|---------------------|------------------|---------------------|--------------|------------------------|-----------------------|
| 26     | 27<br>Course Review | 28               | 29<br>Course Review | 30<br>Review | 1<br>Last Day of Class | 2<br>Academic Retreat |
| 3      | 4<br>Final Exams    | 5<br>Final Exams | 6<br>Final Exams    | 7            | 8                      | 9                     |
| 10     | 11                  | 12               | 13                  | 14           | 15                     | 16                    |
| 17     | 18                  | 19               | 20                  | 21           | 22                     | 23                    |

# **NMMI Introductory Physics for Health Sciences Lab Syllabus**

**Semester:** Spring

**Year:** 2026

**Course number:** PHYS 1112L

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

Thursday 1005-1150 McClure 103

**Teacher Name:** Dr. Aonan Tang (COL)

**Email:** tang@nmmi.edu

**Phone:** (575)624-8169

**Office hours & Location:** 0910-1000 (MWF), McClure 103

## **Course Description:**

A series of laboratory experiments associated with the material presented in PHYS 1112. Co-requisite: PHYS 1112 Introductory Physics for Health Sciences.

## **General scope of the course:**

The laboratories are intended to apply Physics in Medical area to diagnose and treat diseases.

## **Prerequisites or sequences:**

Intro-College Algebra or Higher

Concurrent Enrollment in PHYS 1112

## **Course Outcomes:**

Substantive Objectives: At the conclusion of this course, you will be able to

1. Become familiar with correct laboratory procedures;
2. Be able to identify laboratory apparatus;
3. Use of laboratory safety equipment.

Physical skills gained from these laboratories are:

1. Be able to use common laboratory apparatus
2. Become confident in collecting, organizing, and presenting data in a scientific form.
3. Be able to use graphs, units and formulas to analyze data.
4. Be able to use technology for locating scientific literature, gathering data and problem solving.
5. Be capable of recognizing and using sound scientific information for the betterment of the community.

The numbers in parentheses refer to the Department of Physical Sciences Learning Objectives.

The following state-approved general education skills will be assessed each semester: “critical thinking, Personal Social Responsibility, and quantitative reasoning.”

**Procedures and Classroom Rules:**

- Scientific Calculator, pencil & notebook. **You are required to take notes.**
- **Follow the lab safety rules.**
- **NO LAPTOP OR CELLPHONE in the classroom.**
- Makeup lab, must be completed **in a week after the absence.**

**Textbook:**

The Lab Manual will be provided to you at the beginning of the semester.

**Attendance/Tardiness:**

1. Students are expected to attend all scheduled classes. Absences will be reported.
2. If the student has an excused absence, he/she will be responsible for turning in work due the day of absence as well as the current day's assignment on the day returning to class.
3. An unexcused absence, will result in a "0" for lab due on that day.
4. If tardy, see me at the end of class to change the absent report (failure to see me to change the absent report will result in an "absent class stick" that may not be removed. Tardiness may be reported for disciplinary action. Reporting for tardy will not be removed.

**Grading Procedures:**

Each Lab reports are worth a 100%. The grading scale for each lab reports is:

- 1) Prelab: 10%.
- 2) Introduction: 10%
- 3) Procedure: 10%
- 4) Data collection: 10%
- 5) Data analysis: 15%
- 6) Analysis questions: 15%
- 7) Post lab questions: 20%
- 8) Lab report neatness: 5%
- 9) Others: whether using pen, whether write on lab report book,...5%
- 10) Lab grade = average of all the lab report grades.

The laboratory grade will be 15% or 10% of your course grade depending on your lecture instructor and will not appear as a separate grade on your report card.

I do **NOT** accept late homework, lab reports, or extra credit except in the case of excused class absence on the day the assignment is due. **If you know that you will miss a lab due to an athletic trip or for some other reason, then before the scheduled lab date you must arrange with me a time to make up the lab. Failure to make prior arrangement will result in a 0 on the lab.** In case of an extended period of absence, you and I will confer on the makeup schedule.

**Final Exam Policy:**

No final exam for the lab.

**Department/Division Policy on Academic Dishonesty:**

Cheating, assisting in cheating, or employing other types of academic dishonesty to any degree and in any form automatically results in a grade of ZERO on the entire assignment or test for all

parties involved. Further, a grade of 'F' in that class for the semester may be given and the incident will be referred to the Commandant.

**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.

### **NMMI SCIENCE Department Outcomes**

1. Cadets will be able to demonstrate an understanding of core knowledge in the sciences.
2. Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
3. Cadets will be able to apply the scientific method to solve problems.
4. Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
5. Cadets will be able to acquire and synthesize scientific information from a variety of sources.
6. Cadets will be able to apply techniques and instrumentation to solve problems.

**The instructor reserves the right to make changes to this syllabus as necessary**

### **Weekly Schedule**

| <b>Date</b> | <b>Contents</b>                                   |
|-------------|---------------------------------------------------|
|             |                                                   |
| 01/22/2025  | Lab 1: Experimental Error and Data Analysis       |
| 01/29/2025  | Exam 1 on Chapter 1                               |
| 02/05/2025  | Lab 2: Basic physical exams                       |
| 02/12/2025  | Lab 3: How to use Ultrasound to diagnose diseases |
| 02/19/2025  | Exam 2 on Chapter 1-3                             |
| 02/26/2025  | Lab 4: X-ray & CT scan                            |
| 03/05/2025  | Lab 5: Read CT images                             |
| 03/12/2025  | Exam 3 on Chapter 1-5                             |
| 03/19/2025  | Spring Break, No Lab                              |
| 03/26/2025  | Lab 6: Tour to local medical facility             |
| 04/02/2025  | Exam 4 on Chapter 1-7                             |
| 04/09/2025  | Lab 7: Read PET image                             |
| 04/16/2025  | Lab 8: Read MRI image                             |
| 04/23/2025  | Lab 9: Tour to ENMMC                              |

# PHYS 1112 Lab 5 Read Electrocardiograms (ECG)

## Objective

The purpose of this lab is to understand the basic structure and function of the human heart and to learn how to interpret an electrocardiogram (ECG). Students will identify heart anatomy, understand the role of the sinoatrial (SA) node, and analyze ECG data to determine heart rate and identify potential abnormalities.

## Background

The heart functions as a pump that circulates blood throughout the body. Its rhythm is controlled by an electrical conduction system that coordinates the contraction of the heart muscle. An electrocardiogram (ECG) records the electrical activity of the heart over time and is commonly used to assess heart function and diagnose abnormalities such as arrhythmias.

The **sinoatrial (SA) node**, located in the right atrium, acts as the natural pacemaker of the heart. It initiates electrical impulses that propagate through the heart, causing the chambers to contract in a coordinated manner.

## Materials

- Diagram of the human heart
- Electrocardiogram (ECG) trace
- Ruler
- Calculator

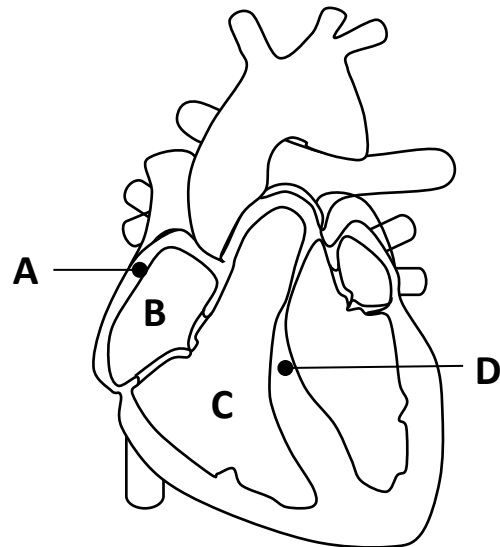
## Procedure

1. Examine the labeled diagram of the human heart.
2. Identify the requested heart structures based on anatomical position.
3. Study the ECG trace provided.
4. Measure time intervals between heartbeats using the ECG.
5. Calculate the average heartbeat period and heart rate.
6. Analyze the ECG for irregularities that may indicate a heart condition.

## Data & Analysis

### Question 1: Heart Anatomy

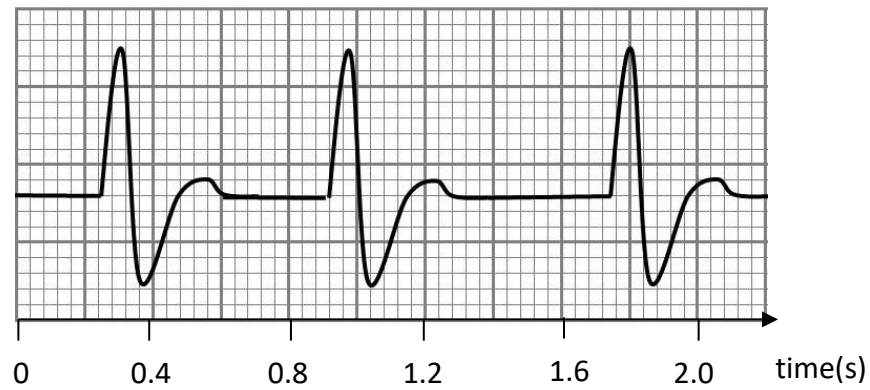
The diagram below shows the heart.



- (a) Which chamber of the heart is labelled with the letter **B**?
- (b) Which letter represents the SA node?
- (c) What does the SA node do?

## Question 2: Electrocardiogram Interpretation

Below is an electrocardiogram (ECG) of a patient.



- (a) Time is plotted on the horizontal axis. Which quantity is plotted on the vertical axis?
- (b) Use the ECG to work out the *average* time period of the heartbeat. Show your working.
- (c) Work out the heart-rate in beats per minutes
- (d) A doctor viewing the ECG is concerned that the person may have a heart problem. Explain why the doctor is concerned





# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5792                              |
| Institution        | NMMI                              |
| Applicant(s)       | yang@nmml.edu                     |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-01-22 01:16 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Orlando Griego

### Chief Academic Officer Email

ogriego@nmmi.edu

### Registrar Name

Nekeya Bertrand

### Registrar Email

bertrand@nmmi.edu

### Course's Academic Department

Science department

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

PHYS

### Number

1112L

### Title

Introductory Physics for the Health Sciences lab

### Number of credits

0

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

No

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

Yes

## Co-requisite Course

---

### Prefix

PHYS

---

### Number

1112

---

### Title

Introductory Physics for the Health Sciences

## New Mexico Common Course Information

---

### Prefix

PHYS

---

### Number

1112L

---

### Title

Introductory Physics for the Health Sciences Lab

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

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

#### Student Learning Outcomes

Upon completion of this course, the student will be able to:

1. Become familiar with correct laboratory procedures.
2. Be able to identify laboratory apparatus.
3. Use of laboratory safety equipment.
4. Be able to use common laboratory apparatus.
5. Become confident in collecting, organizing, and presenting data in a scientific form.
6. Be able to use graphs, units, and formulas to analyze data.
7. Be able to use technology for locating scientific literature, gathering data, and problem-solving.
8. Be capable of recognizing and using sound scientific information for the betterment of the community.

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

#### Course Outcomes:

Substantive Objectives: At the conclusion of this course, you will be able to

1. Become familiar with correct laboratory procedures;
2. Be able to identify laboratory apparatus;
3. Use of laboratory safety equipment.

Physical skills gained from these laboratories are:

1. Be able to use common laboratory apparatus
2. Become confident in collecting, organizing, and presenting data in a scientific form.
3. Be able to use graphs, units and formulas to analyze data.
4. Be able to use technology for locating scientific literature, gathering data and problem solving.
5. Be capable of recognizing and using sound scientific information for the betterment of the community.

#### NMMI SCIENCE Department Outcomes

1. Cadets will be able to demonstrate an understanding of core knowledge in the sciences.
2. Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
3. Cadets will be able to apply the scientific method to solve problems.
4. Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
5. Cadets will be able to acquire and synthesize scientific information from a variety of sources.
6. Cadets will be able to apply techniques and instrumentation to solve problems.

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

Lab 5 Read Electrocardiograms (ECG) will be used to answer the following questions.

This laboratory develops critical thinking by engaging students in the analysis of cardiac structure and

electrical activity. Students begin with problem setting by identifying the purpose of an electrocardiogram and determining how electrical signals relate to heart function and rhythm. Students practice evidence acquisition by examining heart anatomy diagrams and measuring time intervals on ECG traces using rulers and calculators. They collect quantitative evidence related to heartbeat timing and electrical patterns. Students then evaluate evidence by analyzing ECG data to calculate heart rate and identify irregularities that may indicate abnormal cardiac function. Finally, students apply reasoning and draw conclusions by connecting ECG patterns to the role of the sinoatrial (SA) node and normal versus abnormal heart rhythms, justifying their interpretations using physiological and physical principles.

---

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

Lab 5 Read Electrocardiograms (ECG) will be used to answer the following questions.

This lab strengthens quantitative reasoning through the measurement and analysis of ECG data. Students communicate quantitative information by recording time intervals between heartbeats, labeling measurements, and using appropriate units.

Students analyze quantitative arguments by comparing measured heartbeat periods, calculating average values, and determining heart rate from ECG traces. They assess whether calculated results are consistent with expected physiological ranges.

Students apply quantitative models by using algebra-based relationships between time period and frequency to convert ECG measurements into heart rate values. This application demonstrates how simple quantitative models are used to interpret medical data in clinical contexts.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

Lab 5 Read Electrocardiograms (ECG) will be used to answer the following questions.

(Ethical Reasoning + Collaboration Skills)

This laboratory promotes personal and social responsibility through ethical awareness and collaborative learning. Students address ethical reasoning by discussing how ECGs are used to assess heart health and the importance of accurate data interpretation in medical diagnostics, where errors can have significant consequences for patient care.

The lab also emphasizes collaboration and teamwork, as students work together to identify anatomical structures, collect measurements, and interpret ECG results. These activities foster clear communication, shared responsibility, and respect for evidence-based conclusions, reflecting professional expectations in healthcare environments.

---

## Section D. Assessment Plan

---

### Link to Institution's General Education Assessment Plan

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

# Application History

| Type          | username      | Text                                                       | Timestamp                          |
|---------------|---------------|------------------------------------------------------------|------------------------------------|
| Submittal     | yang@nmml.edu | Submitted by yang@nmml.edu                                 | 2026-01-22 01:16 PM (US /Mountain) |
| Authorization | yang@nmml.edu | yang@nmml.edu has authorized the application for submittal | 2026-01-22 01:16 PM (US /Mountain) |
| Created       | yang@nmml.edu | Application started by yang@nmml.edu                       | 2026-01-22 01:05 PM (US /Mountain) |

## **NMMI Introductory Physics for Health Sciences Syllabus**

**Semester:** Spring

**Year:** 2026

**Course number:** PHYS 1112

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

Mon Wed & Fri 1005-1055 McClure 103

**Teacher Name:** Dr. Aonan Tang (COL)

**Email:** tang@nmmi.edu

**Phone:**(575)624-8169

**Office hours & Location:** 0910-1000 (MWF), McClure 103

### **Course Description:**

Algebra-level introduction to topics required for the Health Sciences including basic mechanics (including sound, mechanical waves and fluids), heat and thermodynamics, electricity and magnetism, optics and electromagnetic waves, atomic and nuclear physics and applications to medical imaging. Restricted to Community Colleges campuses only. Includes laboratory.

### **General scope of the course:**

Introduction of how to apply Physics in Medical area to diagnose and treat diseases.

### **Prerequisites or sequences:**

Intro-College Algebra or Higher

### **Course Outcomes:**

#### **A. Student Learning Outcomes**

1. The objective of the course is to familiarize the student with the concepts and methods used in the underlying physics associated with various Health Science disciplines.
2. The course will demonstrate how the basic principles of mechanics, thermodynamics, electricity, magnetism, electromagnetic waves and optics can be applied to solve particular problems in Health Sciences applications. Introduces the student to selected topics in modern physics including quantum physics, atomic and nuclear physics.

#### **B. Optional Student Learning Outcomes**

1. Apply quantum theory in simple situations such as the Bohr model of the atom, dual nature of light, atomic spectra.
2. Apply simple concepts of relativity.

### **Procedures and Classroom Rules:**

- Scientific Calculator, pencil & notebook. **You are required to take notes.**
- **NO LAPTOP OR CELLPHONE in the classroom.**
- **Homework is assigned once a week online. Absolutely no late homework unless an acceptable reason.**

- **The tests are accumulative tests. No test corrections. But bonus points will be assigned before the test. No test grades will be dropped at the end of the semester. But the final exam grade can replace one old test grade.**
- **Makeup lab, homework, quiz or test must be completed in a week after the absence.**
- **One quiz per chapter.** Quiz dates are not posted on the weekly schedule.
- **No change in final exam schedule due to the air ticket, car pool or other reasons.**
- **Every Monday night is the physics night at Wilson Hall. Dr. Tang will be there for the semester.**

### **Textbook:**

Instructor will provide the handouts

The Lab Manual will be provided to you at the beginning of the semester.

### **Attendance/Tardiness:**

1. Students are expected to attend all scheduled classes. Absences will be reported.
2. If you are going to be absent from class on a test day, the test must be taken prior to the absence or the test grade may be counted as a zero.
3. If the student has an excused absence, he/she will be responsible for turning in work due the day of absence as well as the current day's assignment on the day returning to class. If the student returns on a day of a test, the student is responsible for taking that test on that date.
4. An unexcused absence, will result in a "0" for homework due on that day.
5. If tardy, see me at the end of class to change the absent report (failure to see me to change the absent report will result in an "absent class stick" that may not be removed. Tardiness may be reported for disciplinary action. Reporting for tardy will not be removed.

### **Grading Procedures:**

- a) Homework will count for 15% of your course average.
- b) Labs will count 10% of your course average.
- c) Quiz will count 10% of your course average.
- d) Tests will count 40% of your course average.
- e) The final exam will be comprehensive in nature and counts as 20% of your final average.
- f) Class Participation and Behavior. This category will count 5 % towards your final average.
- g) *Grades.* Grades will be assigned according to the scale below:

|               |                |                |                |          |
|---------------|----------------|----------------|----------------|----------|
| 89.0 – 100% A | 79.0 – 88.9% B | 69.0 – 78.9% C | 60.0 – 68.9% D | <60.0% F |
|---------------|----------------|----------------|----------------|----------|

I do **NOT** accept late homework, lab reports, or extra credit except in the case of excused class absence on the day the assignment is due. **If you know that you will miss a test due to an athletic trip or for some other reason, then before the scheduled test date you must arrange**



**with me a time to take the test. Failure to make prior arrangement will result in a 0 on the test.** If a test or quiz is missed due to an excused absence, it will be made up the day you return to class. In case of an extended period of absence, you and I will confer on the makeup schedule.

#### **Science Department Outcomes:**

- A) Cadets will be able to demonstrate an understanding of core knowledge of the sciences.
- B) Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
- C) Cadets will be able to apply the scientific method to solve problems.
- D) Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
- E) Cadets will be able to acquire and synthesize scientific information from a variety of sources.
- F) Cadets will be able to apply techniques and instrumentation to solve problems.

#### **Final Exam Policy:**

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.

#### **Department/Division Policy on Academic Dishonesty:**

Cheating, assisting in cheating, or employing other types of academic dishonesty to any degree and in any form automatically results in a grade of ZERO on the entire assignment or test for all parties involved. Further, a grade of 'F' in that class for the semester may be given and the incident will be referred to the Commandant.

#### **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.

# January, 2026

| Sunday | Monday                                  | Tuesday | Wednesday                                                            | Thursday                                            | Friday                                     | Saturday |
|--------|-----------------------------------------|---------|----------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------|----------|
| 4      | 5                                       | 6       | 7                                                                    | 8                                                   | 9                                          | 10       |
| 11     | 12<br>Syllabus, course<br>introductions | 13      | 14<br>Chapter 1, basic<br>physics concepts                           | 15<br>No Labs                                       | 16<br>Chapter 1, basic<br>physics concepts | 17       |
| 18     | 19<br>No Class                          | 20      | 21<br>Chapter 2, Visible and<br>Infrared light                       | 22<br>Lab1: Experimental<br>Error and Data Analysis | 23<br>Chapter 2, Pulse<br>Oximeters        | 24       |
| 25     | 26<br>Chapter 2,<br>Thermodynamics      | 27      | 28<br>Chapter 2, Heart Beat<br>Monitor and Blood<br>Pressure Monitor | 29<br>Chapter 1 Test                                | 30<br>Chapter 3, Sound                     | 31       |

# February, 2026

| Sunday | Monday                 | Tuesday | Wednesday                  | Thursday                                               | Friday                                | Saturday |
|--------|------------------------|---------|----------------------------|--------------------------------------------------------|---------------------------------------|----------|
| 1      | 2<br>Chapter 3, Sound  | 3       | 4<br>Chapter 3, Ultrasound | 5<br>Lab2: Basic physical exams                        | 6<br>Chapter 3, Ultrasound Scans      | 7        |
| 8      | 9<br>Chapter 3, Fluid  | 10      | 11<br>Review Chapter 2-3   | 12<br>Lab3: How to use Ultrasound to diagnose diseases | 13<br>Chapter 4, EM Spectrum          | 14       |
| 15     | 16<br>No Class         | 17      | 18<br>No Class<br>JPA      | 19<br>Chapter 1-3 Test                                 | 20<br>Chapter 4, Background Radiation | 21       |
| 22     | 23<br>Chapter 4, X-ray | 24      | 25<br>Chapter 4, CT part 1 | 26<br>Lab4: X-ray & CT scan                            | 27<br>Chapter 4, CT part 2            | 28       |

---

# March, 2026

| Sunday | Monday                         | Tuesday            | Wednesday                            | Thursday                                   | Friday                     | Saturday |
|--------|--------------------------------|--------------------|--------------------------------------|--------------------------------------------|----------------------------|----------|
| 1      | 2<br>Chapter 5, CRO traces     | 3                  | 4<br>Chapter 5, ECGs                 | 5<br>Lab5: Read CT images                  | 6<br>Chapter 5, EEG        | 7        |
| 8      | 9<br>Review Chapter 4-5        | 10                 | 11<br>Chapter 6, Types of Radiations | 12<br>Chapter 1-5 Test                     | 13<br>Chapter 6, Half life | 14       |
| 15     | 16<br>Spring Break             | 17<br>Spring Break | 18<br>Spring Break                   | 19<br>Spring Break                         | 20<br>Spring Break         | 21       |
| 22     | 23<br>Chapter 6, Gamma Cameras | 24                 | 25<br>Chapter 7, Beta Decay          | 26<br>Lab6: tour to local medical facility | 27<br>Chapter 7, PET scan  | 28       |

# April, 2026

| Sunday | Monday                                     | Tuesday | Wednesday                            | Thursday                   | Friday                                           | Saturday |
|--------|--------------------------------------------|---------|--------------------------------------|----------------------------|--------------------------------------------------|----------|
| 29     | 30<br>Review Chapter 6-7                   | 31      | 1<br>Review Chapter 6-7              | 2<br>Chapter 1-7 Test      | 3<br>No Class                                    | 4        |
| 5      | 6<br>No Class                              | 7       | 8<br>Chapter 8, Radio waves          | 9<br>Lab7: Read PET image  | 10<br>Chapter 8,<br>Electromagnetic<br>induction | 11       |
| 12     | 13<br>Chapter 8, MRI part 1                | 14      | 15<br>Chapter 8, MRI part 2          | 16<br>Lab8: Read MRI image | 17<br>Chapter 8, Review                          | 18       |
| 19     | 20<br>Compare different<br>imaging methods | 21      | 22<br>Chapter 9, other<br>technology | 23<br>Lab9: Tour to ENMMC  | 24<br>Review Chapter 8-9                         | 25       |

May, 2026

| Sunday | Monday              | Tuesday          | Wednesday           | Thursday     | Friday                 | Saturday              |
|--------|---------------------|------------------|---------------------|--------------|------------------------|-----------------------|
| 26     | 27<br>Course Review | 28               | 29<br>Course Review | 30<br>Review | 1<br>Last Day of Class | 2<br>Academic Retreat |
| 3      | 4<br>Final Exams    | 5<br>Final Exams | 6<br>Final Exams    | 7            | 8                      | 9                     |
| 10     | 11                  | 12               | 13                  | 14           | 15                     | 16                    |
| 17     | 18                  | 19               | 20                  | 21           | 22                     | 23                    |

## **NMMI Introductory Physics for Health Sciences Lab Syllabus**

**Semester:** Spring

**Year:** 2026

**Course number:** PHYS 1112L

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

Thursday 1005-1150 McClure 103

**Teacher Name:** Dr. Aonan Tang (COL)

**Email:** tang@nmmi.edu

**Phone:** (575)624-8169

**Office hours & Location:** 0910-1000 (MWF), McClure 103

### **Course Description:**

A series of laboratory experiments associated with the material presented in PHYS 1112. Co-requisite: PHYS 1112 Introductory Physics for Health Sciences.

### **General scope of the course:**

The laboratories are intended to apply Physics in Medical area to diagnose and treat diseases.

### **Prerequisites or sequences:**

Intro-College Algebra or Higher

Concurrent Enrollment in PHYS 1112

### **Course Outcomes:**

Substantive Objectives: At the conclusion of this course, you will be able to

1. Become familiar with correct laboratory procedures;
2. Be able to identify laboratory apparatus;
3. Use of laboratory safety equipment.

Physical skills gained from these laboratories are:

1. Be able to use common laboratory apparatus
2. Become confident in collecting, organizing, and presenting data in a scientific form.
3. Be able to use graphs, units and formulas to analyze data.
4. Be able to use technology for locating scientific literature, gathering data and problem solving.
5. Be capable of recognizing and using sound scientific information for the betterment of the community.

The numbers in parentheses refer to the Department of Physical Sciences Learning Objectives.

The following state-approved general education skills will be assessed each semester: “critical thinking, Personal Social Responsibility, and quantitative reasoning.”

**Procedures and Classroom Rules:**

- Scientific Calculator, pencil & notebook. **You are required to take notes.**
- **Follow the lab safety rules.**
- **NO LAPTOP OR CELLPHONE in the classroom.**
- Makeup lab, must be completed **in a week after the absence.**

**Textbook:**

The Lab Manual will be provided to you at the beginning of the semester.

**Attendance/Tardiness:**

1. Students are expected to attend all scheduled classes. Absences will be reported.
2. If the student has an excused absence, he/she will be responsible for turning in work due the day of absence as well as the current day's assignment on the day returning to class.
3. An unexcused absence, will result in a "0" for lab due on that day.
4. If tardy, see me at the end of class to change the absent report (failure to see me to change the absent report will result in an "absent class stick" that may not be removed. Tardiness may be reported for disciplinary action. Reporting for tardy will not be removed.

**Grading Procedures:**

Each Lab reports are worth a 100%. The grading scale for each lab reports is:

- 1) Prelab: 10%.
- 2) Introduction: 10%
- 3) Procedure: 10%
- 4) Data collection: 10%
- 5) Data analysis: 15%
- 6) Analysis questions: 15%
- 7) Post lab questions: 20%
- 8) Lab report neatness: 5%
- 9) Others: whether using pen, whether write on lab report book,...5%
- 10) Lab grade = average of all the lab report grades.

The laboratory grade will be 15% or 10% of your course grade depending on your lecture instructor and will not appear as a separate grade on your report card.

I do **NOT** accept late homework, lab reports, or extra credit except in the case of excused class absence on the day the assignment is due. **If you know that you will miss a lab due to an athletic trip or for some other reason, then before the scheduled lab date you must arrange with me a time to make up the lab. Failure to make prior arrangement will result in a 0 on the lab.** In case of an extended period of absence, you and I will confer on the makeup schedule.

**Final Exam Policy:**

No final exam for the lab.

**Department/Division Policy on Academic Dishonesty:**

Cheating, assisting in cheating, or employing other types of academic dishonesty to any degree and in any form automatically results in a grade of ZERO on the entire assignment or test for all



parties involved. Further, a grade of 'F' in that class for the semester may be given and the incident will be referred to the Commandant.

**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.

### **NMMI SCIENCE Department Outcomes**

1. Cadets will be able to demonstrate an understanding of core knowledge in the sciences.
2. Cadets will be able to apply critical thinking and analytical skills to solve scientific data sets.
3. Cadets will be able to apply the scientific method to solve problems.
4. Cadets will be able to demonstrate written, visual, and/or oral presentation skills to communicate scientific knowledge.
5. Cadets will be able to acquire and synthesize scientific information from a variety of sources.
6. Cadets will be able to apply techniques and instrumentation to solve problems.

**The instructor reserves the right to make changes to this syllabus as necessary**

### **Weekly Schedule**

| <b>Date</b> | <b>Contents</b>                                   |
|-------------|---------------------------------------------------|
|             |                                                   |
| 01/22/2025  | Lab 1: Experimental Error and Data Analysis       |
| 01/29/2025  | Exam 1 on Chapter 1                               |
| 02/05/2025  | Lab 2: Basic physical exams                       |
| 02/12/2025  | Lab 3: How to use Ultrasound to diagnose diseases |
| 02/19/2025  | Exam 2 on Chapter 1-3                             |
| 02/26/2025  | Lab 4: X-ray & CT scan                            |
| 03/05/2025  | Lab 5: Read CT images                             |
| 03/12/2025  | Exam 3 on Chapter 1-5                             |
| 03/19/2025  | Spring Break, No Lab                              |
| 03/26/2025  | Lab 6: Tour to local medical facility             |
| 04/02/2025  | Exam 4 on Chapter 1-7                             |
| 04/09/2025  | Lab 7: Read PET image                             |
| 04/16/2025  | Lab 8: Read MRI image                             |
| 04/23/2025  | Lab 9: Tour to ENMMC                              |

# PHYS 1112 Lab 5 Read Electrocardiograms (ECG)

## Objective

The purpose of this lab is to understand the basic structure and function of the human heart and to learn how to interpret an electrocardiogram (ECG). Students will identify heart anatomy, understand the role of the sinoatrial (SA) node, and analyze ECG data to determine heart rate and identify potential abnormalities.

## Background

The heart functions as a pump that circulates blood throughout the body. Its rhythm is controlled by an electrical conduction system that coordinates the contraction of the heart muscle. An electrocardiogram (ECG) records the electrical activity of the heart over time and is commonly used to assess heart function and diagnose abnormalities such as arrhythmias.

The **sinoatrial (SA) node**, located in the right atrium, acts as the natural pacemaker of the heart. It initiates electrical impulses that propagate through the heart, causing the chambers to contract in a coordinated manner.

## Materials

- Diagram of the human heart
- Electrocardiogram (ECG) trace
- Ruler
- Calculator

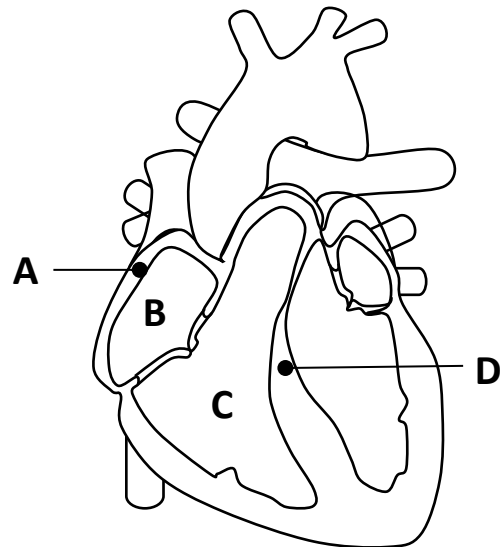
## Procedure

1. Examine the labeled diagram of the human heart.
2. Identify the requested heart structures based on anatomical position.
3. Study the ECG trace provided.
4. Measure time intervals between heartbeats using the ECG.
5. Calculate the average heartbeat period and heart rate.
6. Analyze the ECG for irregularities that may indicate a heart condition.

## Data & Analysis

### Question 1: Heart Anatomy

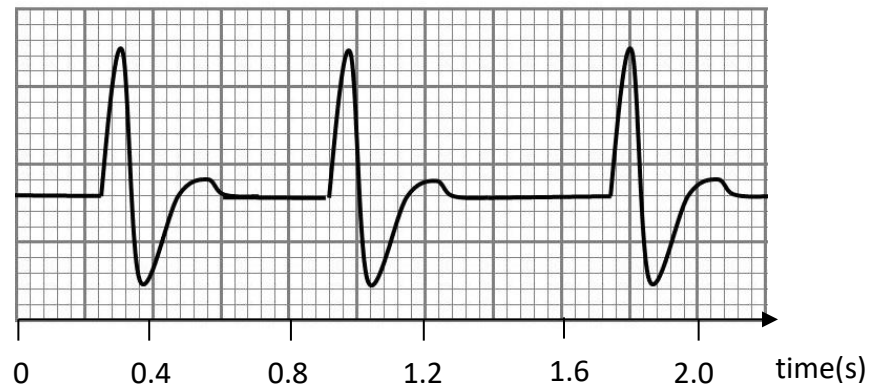
The diagram below shows the heart.



- (a) Which chamber of the heart is labelled with the letter **B**?
- (b) Which letter represents the SA node?
- (c) What does the SA node do?

## Question 2: Electrocardiogram Interpretation

Below is an electrocardiogram (ECG) of a patient.



- (a) Time is plotted on the horizontal axis. Which quantity is plotted on the vertical axis?
- (b) Use the ECG to work out the *average* time period of the heartbeat. Show your working.
- (c) Work out the heart-rate in beats per minutes
- (d) A doctor viewing the ECG is concerned that the person may have a heart problem. Explain why the doctor is concerned



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5595                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2025-12-16 09:44 AM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Science

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

BIOL

---

### Number

2110C

---

### Title

Principles of Biology: Cellular and Molecular Lecture & Lab

---

### Number of credits

3

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

BIOL

---

### Number

2110C

---

### Title

Principles of Biology: Cellular and Molecular Lecture & Lab

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

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

1. Apply the scientific method to develop and evaluate hypotheses and propose an experiment to test a scientific hypothesis related to cell biology and molecular biology.
2. Describe the distinguishing characteristics of various biological molecules (water, carbohydrates, lipids, proteins, and nucleic acids). (HED Area 3, Competency 3).
3. Compare and contrast the basic features of cells and how prokaryotic cells differ from eukaryotic cells. (HED Area 3, Competency 3).
4. Understand how organisms maintain homeostasis in a dynamic environment.
5. Describe how biological molecules are acquired and how they are subsequently used to meet the metabolic needs of organisms. (HED Area 3, Competency 3).
6. Describe membrane structure and function.
7. Describe and analyze the nature of bioenergetic transformations and metabolism within the cell.
8. Describe the processes of cellular respiration and photosynthesis.
9. Analyze with specific detail the processes of DNA replication, transcription, and translation.
10. Analyze with specific detail the types, mechanisms, and regulation of cellular division.
11. Assess important applications of cell and molecular biology to energy use, medicine, and other day-to-day processes. (HED Area 3, Competency 1,3,4,5)
12. Describe and apply the scientific method to solve problems in biological context.
13. Demonstrate knowledge of laboratory safety skills and procedures.
14. Practice principles of scientific method while conducting laboratory activities and experiments.
15. Perform laboratory activities using relevant laboratory equipment, chemical reagents, and supplies to observe biological specimens, to measure variables, and to design and conduct experiments.
16. Operate light microscopes, prepare wet mount slides, and use stains.
17. Exhibit ability to use pipettes and other volumetric measuring devices, chemical glassware, balances, pH meters or test papers, spectrophotometers, and separation techniques, such as chromatography and/or electrophoresis to perform activities relevant to other course competencies.
18. Analyze and report data generated during laboratory activities and experiments.

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

N/A

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

Problem Setting: Students identify and define core biological problems related to cellular processes, molecular mechanisms, and organismal function. Through guided discussions and brainstorming sessions, students are encouraged to connect microscopic events, such as cell shapes, organelle location within cells, gene regulation, membrane transport, and enzyme function, to real-world phenomena, including disease



mechanisms, environmental stressors, and human health issues. In written assignments, students clearly articulate the central biological question, distinguish relevant molecular or cellular components, and outline the context needed to frame the scientific problem accurately.

**Evidence Acquisition:** Students apply the scientific method in laboratory experiments, literature reviews, and data-analysis exercises. They gather information from primary research articles, short lecture videos, microscopy observations, and biochemical assays. Students learn to select credible scientific sources, utilize appropriate laboratory tools such as micropipettes, spectrophotometers, and gel electrophoresis systems, and recognize the limitations and variability inherent in the collection of cellular and molecular data.

**Evidence Evaluation:** Students analyze the quality, reliability, and biological relevance of the data they collect through lab exercises. They determine whether experimental results support or contradict molecular hypotheses, identify sources of error in laboratory procedures, and assess the validity of competing explanations for cellular behavior. In peer-review discussions, students critique experimental designs, analyze alternative interpretations, and determine which conclusions are most consistent with established biological principles and scientific reasoning.

**Reasoning / Conclusion:** Students synthesize molecular and cellular evidence to draw logical, evidence-based conclusions about biological questions. They justify their interpretations using sound scientific reasoning, linking experimental outcomes to underlying mechanisms such as protein structure–function relationships, genetic regulation, metabolic pathways, or cellular homeostasis. Students communicate their reasoning through written laboratory reports, presentations, and exam responses. Assessments evaluate clarity, accuracy, depth of analysis, and the students’ ability to apply biological concepts to novel situations.

---

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

**Communication and Representation:** Students communicate molecular and cellular concepts through written reports, oral presentations, homework assignments, and laboratory documentation. By articulating quantitative findings both verbally and in writing, students strengthen their ability to explain how symbolic or numerical representations relate to underlying biological mechanisms.

**Analysis of Quantitative Arguments:** Students analyze quantitative data generated in the laboratory to evaluate competing biological explanations. For example, experiments on osmosis and diffusion allow students to assess how solute concentration affects cellular volume and membrane transport. They critique experimental designs, identify possible errors, and compare model predictions with observed outcomes. Through collaborative discussions, students evaluate peers’ reasoning for methodological accuracy, logical rigor, and alignment with established principles of molecular and cellular biology.

**Application of Quantitative Models:** Students apply quantitative reasoning to authentic biological problems, such as predicting genetic inheritance patterns using Mendelian ratios or modeling population changes under varying environmental conditions. They interpret numerical outcomes within the biological context, linking them to gene expression, ecological constraints, or evolutionary processes. This allows students to understand why these calculations matter in interpreting biological phenomena.

**Assessment Connection:** Quantitative reasoning is assessed through quizzes, exams, data-driven assignments, and laboratory exercises where students must build, compute, and justify biological models. Assessments evaluate the student’s ability to interpret data accurately, apply mathematical principles to cellular and molecular systems and communicate the scientific reasoning behind their conclusions

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global** In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.

**Sustainability and the Natural and Human World:** Through these hands-on inquiries, students gain a deeper understanding of how cellular interactions drive ecological balance and community health. They evaluate how microbial contamination could influence animal physiology, ecosystem stability, and human well-being, and they consider how cellular-level disruptions can scale into public health concerns. This approach encourages students to reflect on environmental stewardship, sustainable resource management, and the interconnectedness of molecular biology with broader natural systems. Students learn to view biology as a tool for understanding and protecting the delicate relationship between humans and the natural world.

**Collaboration skills, teamwork, and value systems:** Collaborative laboratory work and group presentations strengthen students' teamwork, communication, and interpersonal responsibility. Students practice dividing tasks equitably, integrating diverse perspectives, and articulating molecular concepts clearly to peers. Presentation sessions allow students to exchange ideas respectfully, evaluate differing interpretations, and refine their scientific arguments through constructive dialogue.

## Section D. Assessment Plan

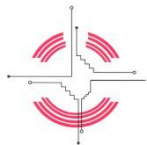
---

**[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)**

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2025-12-16 09:44 AM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2025-12-16 09:44 AM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2025-12-16 09:22 AM (US/Mountain) |



**Fall 2025 Final Capstone Exam**

**DATE: 12/01/2025**

**Principle of Biology (BIOL 2110C)**

**Instructor: Franklin Maloba**

**Capstone Essay Examination**

Select two of the following essay prompts to demonstrate your mastery of core concepts in cell and molecular biology. This capstone essay is designed to assess students' ability to think critically, integrate scientific concepts, and communicate biological knowledge with clarity and accuracy.

**1. Flow of Genetic Information:**

Explain how genetic information is transmitted from DNA to protein, and discuss how errors or disruptions in this process can lead to human disease. Provide specific molecular examples to support your explanation.

**2. Cell Structure and Function:**

Analyze the relationship between cell structure and function, using at least three organelles as examples. Highlight how the unique architecture of each organelle contributes to its biological role.

**3. Regulation of the Cell Cycle:**

Describe the major regulatory mechanisms that control the cell cycle and explain how the failure of these mechanisms can lead to uncontrolled cell division and the development of cancer.

**Expectations and Guidelines**

- Essays should be well-organized, scientifically accurate, and written in clear academic language.
- Claims should be supported with appropriate biological reasoning and examples.
- Students are encouraged to approach their selected topics with intellectual curiosity, depth, and confidence.
- Academic integrity is expected; all work must be original and appropriately referenced if external sources are used.



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5635                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2025-12-21 02:07 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Science

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

BIOL

---

### Number

1110C

---

### Title

General Biology Lecture & Laboratory

---

### Number of credits

4

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

BIOL

---

### Number

1110C

---

### Title

General Biology Lecture & Laboratory

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

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

Lecture SLOs.

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.

Laboratory SLOs.

1. Employ critical thinking skills to judge the validity of information from a scientific perspective. 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

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

Problem Setting: Students identify and define biological problems during structured class discussions and brainstorming sessions. These activities challenge students to connect foundational biological principles to real-world situations, public-health issues, ecological challenges, and personal experiences. In written assignments, students must articulate the central question, distinguish relevant from irrelevant factors, and clearly outline the biological context of the problem.



**Evidence Acquisition:** Assignments, quizzes, and classroom exercises require students to gather appropriate evidence through the application of the scientific method. Students locate, interpret, and collect data from scientific literature, laboratory observations, biological datasets, and case studies. They learn to select credible sources, apply accurate measurement techniques, and recognize the limitations of available evidence.

**Evidence Evaluation:** Students critically evaluate the quality, reliability, and relevance of the evidence they obtain. They assess whether data support or refute biological claims, examine potential errors or bias in methods, and compare competing explanations. During discussions and peer-review activities, students analyze the strengths and weaknesses of various arguments and determine which interpretations are most scientifically sound.

**Reasoning/Conclusion:** Students synthesize evidence to formulate logical, evidence-based conclusions about biological problems. They justify their interpretations using clear scientific reasoning and communicate their thought processes coherently in essays, presentations, and assessments. Written assignments are evaluated for accuracy, depth of analysis, and clarity, while selected-response items measure precision in applying biological principles. This comprehensive approach ensures that students develop the ability to think analytically, generate sound scientific judgments and communicate biological reasoning with precision and confidence.

---

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

**Communication and Representation of Quantitative Information:** Students learn to translate biological principles, concepts, and theory through oral presentations, write-ups, homework assignments, and laboratory sessions. They articulate quantitative findings clearly in written and verbal form, reinforcing the connection between symbolic representations and their biological significance.

**Analysis of Quantitative Arguments:** Students critically evaluate alternative models and solutions in the lab, determining which biological approach most accurately reflects the underlying biology. They assess concepts such as the effect of osmosis on cells, which enables them to understand transport across the cell membranes. Students also interpret peers' quantitative reasoning through class discussions and lab experiments to assess logical soundness, methodological rigor, and biological validity.

**Application of Quantitative Models:** Students apply quantitative methods to real biological scenarios, such as analyzing genetic inheritance patterns or determining the impact of environmental changes on population size. Emphasis is placed on interpreting solutions within the biological context and understanding how quantitative outcomes support scientific conclusions.

Quantitative reasoning is assessed through targeted questions on quizzes and exams, data-driven assignments, and lab sessions in which students construct, compute, and justify a biological model.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

**Sustainability and the Natural and Human Worlds:** Through hands-on fieldwork, students gain firsthand insight into how biological systems interact with environmental, cultural, and human factors. They assess the implications of water contamination on animal health, ecosystem stability, and community well-being. This process encourages students to think critically about sustainable resource use, environmental stewardship, and the interconnectedness of human and natural systems. Students learn to view biology not as an isolated discipline but as a lens for understanding and protecting the world around them.

**Collaboration skills, teamwork, and value systems:** Group-based assignments and laboratory work foster strong collaboration skills. Students learn to divide responsibilities, communicate effectively, and integrate diverse viewpoints. During presentations, each student contributes their perspective while engaging respectfully and constructively with peers who may agree, challenge, or expand upon their ideas. This

collaborative learning environment reinforces mutual respect, active listening, and shared accountability, skills essential for scientific teamwork and community engagement.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2025-12-21 02:07 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2025-12-21 02:07 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2025-12-21 01:48 PM (US/Mountain) |



**General Biology Fall Exam (BIOL 1110C)**

**Dec 1<sup>st</sup>, 2025.**

**Instructor: Franklin Maloba**

### **Final Capstone Exam Assignment**

For the final capstone project, students were asked to work in groups of three to collect a sample of stagnant water from a location where livestock or other animals regularly drink. Each group will prepare both a written report and a PowerPoint presentation detailing their findings. The project should include:

1. Description of the Water Source:
  - Location of sample collection
  - Types and number of animal species that use the water source
2. Water Characteristics:
  - Macroscopic observations (color, odor, debris, turbidity)
  - Microscopic analysis (identification of cells, organisms, or structures present)
3. Parasitological Findings:
  - Identification of parasites present in the sample
  - Discussion of the potential effects of these parasites on animal health
  - Evaluation of possible risks to human populations and public health

### **Assignment Purpose and Learning Outcomes:**

This capstone assignment is designed to assess not only scientific knowledge but also students' personal responsibility, social responsibility, and engagement with real-world biological challenges. Through hands-on fieldwork and laboratory analysis, students gain a deeper understanding of how microorganisms, such as parasites and bacteria, interact with their environment and influence ecological balance, animal health, and community well-being.

The project also evaluates students' ability to think critically through:

- Evidence acquisition: Collecting and interpreting real environmental samples
- Scientific reasoning: Drawing logical conclusions supported by data
- Quantitative reasoning: Representing data clearly, applying basic models, and communicating findings effectively

Students were encouraged to approach this assignment with curiosity, professionalism, and a commitment to learning. This capstone experience is an opportunity to integrate course concepts, develop practical scientific skills, and appreciate the importance of biology in safeguarding both environmental and public health.



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5640                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2025-12-21 03:15 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Colleen Bowman

### Chief Academic Officer Email

cbowman@navajotech.edu

### Registrar Name

Jason Wright

### Registrar Email

jasonwright@navajotech.edu

### Course's Academic Department

Science

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

CHEM

### Number

1120C

### Title

Introduction to Chemistry Lecture and Laboratory

### Number of credits

4

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

No

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

CHEM

---

### Number

1120C

---

### Title

Introduction to Chemistry Lecture and Laboratory

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

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

#### Lecture Student Learning Outcomes

1. Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements
2. Identify elements from their name or symbol, use the periodic table to describe reactivity patterns of elements and to predict compound formation.
3. Describe the basic structure of an atom using subatomic particles, and apply these concepts to nuclear reactions.
4. Describe ion formation and the difference between covalent and ionic compounds. Name and write formulas for ionic and simple molecular compounds.
5. Write and balance chemical reactions. Use balanced reactions in stoichiometric calculations.
6. Describe the differences between the solid, liquid and gas phases. Use the gas laws in calculations, and apply these laws to everyday situations.
7. Explain different types of energy, and how energy is released or absorbed in a reaction
8. Describe acid and base behavior.
9. Explain the intermolecular attractive forces that determine physical properties apply this knowledge to qualitatively evaluate these forces and predict the physical properties that result.
10. Explain the intermolecular attractive forces that determine physical properties; apply this knowledge to qualitatively evaluate these forces and predict the physical properties that result

#### Laboratory Student Learning Outcomes

1. Practice concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory-related calculations to include, but not be limited to determining the number of significant figures in numerical value, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Record quantitatively measured values to the correct number of significant figures and assign the correct units.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Draw appropriate conclusions based on data and analyses.
7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
8. Determine chemical formulas and classify different types of reactions.
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



## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Problem Setting:

Students develop critical thinking by identifying and defining chemical problems that connect fundamental principles to real-world contexts. Using topics such as the periodic table, atomic structure, bonding, chemical reactions, atmospheric chemistry, electromagnetic radiation, energy from combustion, and alternative energy sources, they frame meaningful scientific questions. Students predict chemical behavior, evaluate energy efficiency, and assess environmental impacts. Instructors assess problem-setting skills through written assignments, in-class exercises, and discussion participation, focusing on students' ability to clearly define problems and determine relevant chemical concepts.

Evidence Acquisition:

Students gather and analyze chemical evidence through quantitative measurements, data interpretation, and structured problem-solving activities. They calculate reaction quantities, examine periodic trends, analyze energy changes, and interpret tables, graphs, and models. Classroom exercises and hands-on simulations reinforce accurate measurement, proper unit usage, and careful observation. Instructors assess learning through graded problem sets, lab-style exercises, and data interpretation tasks, emphasizing precision, completeness, and correct application of chemical principles.

Evidence Evaluation:

Students critically evaluate the reliability of chemical evidence by assessing assumptions, sources of uncertainty, and consistency with core chemistry concepts. They compare calculated results with expected trends in bonding, reaction behavior, and energy transfer, and question the limitations of models describing atmospheric chemistry and climate processes. Instructors assess this skill through written analyses, discussion contributions, and problem-solving exercises, emphasizing students' ability to identify limitations, inconsistencies, and well-supported chemical explanations.

Reasoning and Conclusion:

Students integrate evidence and theory to draw logical, evidence-based conclusions about chemical phenomena and societal impacts. They use stoichiometry, atomic structure, bonding, and energy transformations to explain patterns, predict outcomes, and justify claims related to energy use, chemical reactions, and environmental systems. Instructors assess reasoning through written reports, exams, and class discussions, focusing on students' ability to construct coherent, data-supported arguments while acknowledging uncertainty and limitations.

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

Quantitative Reasoning and Communication of Quantitative Information:

Students develop quantitative reasoning by using numerical data to describe and explain chemical phenomena, including atomic structure, basic reactions, atmospheric composition, energy transfer, and climate change. They perform calculations involving stoichiometry, energy changes, concentrations, and chemical measurements, applying proper units and significant figures. Students communicate results clearly

through tables, graphs, equations, and dimensional analysis, translating numerical outcomes into meaningful chemical interpretations. Instructors assess learning through problem sets, in-class exercises, and written assignments, evaluating accuracy, clarity, and the ability to connect mathematical results to chemical and environmental contexts.

#### Analysis of Quantitative Arguments:

Students critically analyze quantitative arguments by determining whether numerical data, calculations, and chemical relationships support scientific claims. They examine reaction yields, energy efficiencies, atmospheric trends, and bonding patterns to assess consistency with chemical principles. Students identify assumptions, verify calculations, and evaluate the reasonableness of results, distinguishing evidence-based conclusions from unsupported claims. Instructors assess this skill through graded exercises, discussion contributions, and written analyses, emphasizing logical interpretation, data reliability, and critical evaluation of chemical arguments.

#### Application of Quantitative Models:

Students apply quantitative chemical models to predict and explain behavior across atomic, molecular, and environmental systems. They use tools such as atomic structure representations, stoichiometric relationships, energy balance equations, and simplified climate models to link theory with observable data. By applying these models to real-world scenarios—such as combustion, alternative energy sources, and solar radiation—students evaluate model effectiveness, recognize limitations, and refine understanding. Instructors assess this application through problem sets, applied exercises, and written reflections, focusing on students' ability to integrate quantitative reasoning with chemical and environmental contexts.

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global** In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.

#### Ethical Reasoning:

Students practice scientific integrity by accurately recording observations, honestly reporting results, and adhering to safety protocols during laboratory exercises and in-class activities. They reflect on the ethical implications of experimental decisions, responsible data interpretation, and professional conduct in scientific work. Instructors assess ethical reasoning through lab and class reports, safety quizzes, and written reflections, focusing on accuracy, transparency, and adherence to ethical standards.

#### Collaboration Skills, Teamwork, and Value Systems:

Students actively collaborate in teams to plan and execute experiments, divide responsibilities equitably, and communicate effectively while analyzing results. They engage in discussions, provide constructive feedback, and solve problems collectively, fostering accountability, mutual respect, and professional behavior. Instructors assess collaboration through participation rubrics, group project evaluations, lab reports, and observation of team interactions, emphasizing contribution, engagement, and quality of collaborative reasoning.

## Section D. Assessment Plan

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2025-12-21 03:15 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2025-12-21 03:14 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2025-12-21 03:06 PM (US/Mountain) |

## **Assignment: Introduction to Chemistry, CHEM-1120C**

Read and strictly follow all instructions below:

Note: This sheet is only for questions. Do not write answers on this sheet. Use separate physical pages for your handwritten assignment.

Instructions:

- All assignments must be handwritten on separate physical pages.
- Include steps, observations, calculations, and conclusions for every task or question.
- Last date of submission: 1 week from the date of posting. There will not be any individual reminders.
- Clearly write your name, date, and class on the assignment.
- Assignments may be submitted in person or through Blackboard.

## **Topic: Balancing Chemical Equation and Quantitative Chemical Reasoning**

### **Course Context**

This assessment evaluates your ability to apply fundamental chemistry concepts, including atomic structure, chemical reactions, conservation of mass, and stoichiometry, to balance chemical equations correctly. You will demonstrate quantitative reasoning, use chemical models, and communicate your reasoning clearly.

### **Learning Objectives**

By completing this assessment, you will be able to:

- Apply the law of conservation of mass to chemical reactions
- Identify reactants and products in chemical equations
- Balance chemical equations using appropriate coefficients
- Interpret balanced equations in terms of atoms, molecules, and moles
- Explain the quantitative meaning of balanced equations in real-world contexts

## Student Instructions

- Read each question carefully before beginning.
- Show all work clearly where required.
- Use whole-number coefficients only.
- Do **not** change subscripts in chemical formulas.
- Include brief explanations where requested.

## Part A: Conceptual Understanding (Short Answer)

### 1. Law of Conservation of Mass:

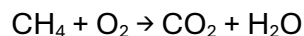
In 3–4 sentences, explain how the law of conservation of mass applies to chemical reactions. Why is this law essential for balancing chemical equations?

### 2. Atomic-Level Interpretation

Explain the difference between a coefficient and a subscript in a chemical formula. Why can coefficients be changed when balancing equations, but subscripts cannot?

## Part B: Balancing Chemical Equations

Balance each of the following chemical equation. Write the balanced equation clearly with coefficients.



## Part C: Quantitative Reasoning and Interpretation

Answer the following questions using one or two complete sentences each.

1. For the above given chemical reaction, explain what the balanced equation tells you about the ratio of methane molecules to oxygen molecules consumed.
2. Using the above reaction, explain how the balanced equation relates to mole-to-mole relationships in stoichiometry.

#### **Part D: Reflection (Critical Thinking)**

In 4–5 sentences, reflect on how balancing chemical equations connects atomic structure, chemical reactions, and quantitative reasoning. How does this skill help you understand energy use, atmospheric processes, or environmental challenges?

#### **Submission Requirements**

- Submit your completed assessment as a typed document or neatly written pages.
- A balanced equation must be clearly written
- Explanations must be complete and scientifically accurate
- Late submissions may receive reduced credit per the course policy

#### **Key Skills Assessed**

- Conservation of mass
- Quantitative reasoning
- Application of chemical models
- Clear scientific communication



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5642                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2025-12-21 03:46 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Science

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

ENVS

---

### Number

1110

---

### Title

Environmental Science I

---

### Number of credits

3

---

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

No

---

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

No



## Co-requisite Course

### Prefix

N/A

### Number

N/A

### Title

N/A

## New Mexico Common Course Information

### Prefix

ENVS

### Number

1110

### Title

Environmental Science I

## A. Content Area and Essential Skills

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

Science

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

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

1. Students will learn to critically analyze cause-and-effect relationships in the environment.
2. Students will integrate and synthesize knowledge and draw appropriate conclusions based on the scientific method

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

Students will relate current environmental issues to their personal, economic, and cultural circumstances.

## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Problem Setting:

Students analyze real-world environmental scenarios—such as water contamination, air-quality issues, or soil degradation—to identify key scientific and societal components. Through guided discussions, case studies, and short problem-framing assignments, they define the scope of each issue, formulate clear scientific questions, and determine the processes that need investigation. Instructors assess problem-setting skills through written assignments, discussion participation, and case-study reflections, focusing on students' ability to clearly define problems and identify relevant environmental factors.

Evidence Acquisition:

Students gather appropriate data from reliable sources, including monitoring datasets, peer-reviewed articles, and environmental regulatory reports. Lab-style demonstrations or virtual simulations allow them to observe environmental processes and collect basic measurements. These activities emphasize selecting relevant evidence and applying proper methods to collect and interpret data. Instructors assess learning through graded exercises, data interpretation tasks, and reflections on evidence-gathering processes, evaluating accuracy, completeness, and appropriateness of selected sources.

Evidence Evaluation:

Students critically evaluate the quality and relevance of collected evidence, identifying methodological strengths, limitations, uncertainties, and potential biases. They compare conflicting information, weigh multiple lines of evidence, and determine which sources are most trustworthy for informed environmental decision-making. Instructors assess this skill through written analyses, discussion contributions, and problem-solving exercises, focusing on students' ability to recognize uncertainties, assess reliability, and justify their conclusions.

Reasoning and Conclusion:

Students synthesize evidence to develop logical, data-supported conclusions about environmental protection or remediation strategies. Written reports, argument-driven essays, and group presentations require students to articulate claims clearly, support them with evidence, consider alternative viewpoints, and justify recommendations. Instructors assess reasoning and conclusion skills through these assignments, emphasizing coherent, evidence-based arguments and well-supported environmental decision-making

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

Communication and Representation of Quantitative Information:

Students organize and present quantitative environmental data, including water-quality indicators, air-pollution measurements, population growth rates, and energy-use statistics. They construct tables, generate graphs, and interpret visual representations such as concentration curves, flow diagrams, and mass-balance charts. Short writing assignments and lab-style exercises require students to explain trends, describe environmental implications, and convey findings using accurate quantitative language. Instructors assess this skill through graded exercises, reports, and in-class presentations, focusing on clarity, correctness, and

effective communication of numerical information.

#### Analysis of Quantitative Arguments:

Students critically evaluate quantitative claims in scientific articles, environmental reports, and media sources. They identify underlying assumptions, check calculations for logical consistency, and determine whether the evidence supports stated conclusions. By comparing datasets, analyzing error margins, and recognizing measurement limitations, students learn to assess the reliability of quantitative arguments used to justify environmental decisions. Instructors assess this skill through written critiques, discussion contributions, and problem-solving exercises, emphasizing accuracy, logical reasoning, and evidence-based evaluation.

#### Application of Quantitative Models:

Students apply foundational quantitative models relevant to environmental science, including pollutant transport equations, population growth models, energy balance calculations, and carbon-footprint estimations. Guided problem sets and applied case studies allow students to explore variable interactions, evaluate how parameter changes affect outcomes, and use models to assess remediation or sustainability strategies. Instructors assess application skills through assignments, case-study reports, and class exercises, focusing on correct model use, interpretation of results, and understanding the strengths and limitations of quantitative approaches.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

#### Intercultural Reasoning and Intercultural Competence:

Students analyze case studies from diverse regions and cultures to examine how environmental issues—such as water scarcity, air pollution, and food insecurity—affect communities differently worldwide. Through guided discussions, group exercises, and written reflections, they consider cultural perspectives, traditional ecological knowledge, and the importance of culturally sensitive solutions. Instructors assess learning through case-study analyses, reflective essays, and participation in discussions, focusing on students' ability to integrate cultural context into environmental reasoning and demonstrate intercultural competence.

#### Sustainability and the Natural and Human Worlds:

Students explore the connections between ecological systems, human activities, and long-term resource sustainability. They evaluate real-world examples of land, water, air, and food management, analyzing how human decisions influence environmental health and community well-being. Activities include problem-solving exercises, data interpretation, and scenario-based discussions that emphasize responsible decision-making and sustainable practices. Instructors assess sustainability awareness through written assignments, in-class exercises, and participation rubrics, emphasizing students' ability to apply knowledge of ecological systems and human impacts to propose environmentally and socially responsible solutions.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2025-12-21 03:46 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2025-12-21 03:46 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2025-12-21 03:30 PM (US/Mountain) |

Rubric

| Skill Area<br>(Weight)                                | Criteria                           | Excellent (A)                                                     | Proficient (B–C)                        | Emerging (D)                      |
|-------------------------------------------------------|------------------------------------|-------------------------------------------------------------------|-----------------------------------------|-----------------------------------|
| <b>Critical Thinking<br/>(40%)</b>                    | Problem Setting                    | Clear, comprehensive framing of problem; identifies key questions | Adequate problem description            | Minimal understanding of issue    |
|                                                       | Evidence Acquisition               | Uses high-quality, relevant sources; effective summary            | Acceptable sources; adequate summary    | Weak or irrelevant evidence       |
|                                                       | Evidence Evaluation                | Thorough evaluation of uncertainty, bias, and reliability         | Some evaluation of evidence             | Little or no evaluation           |
| <b>Quantitative Reasoning<br/>(40%)</b>               | Data Representation                | Accurate, well-labeled graphs, tables, and calculations           | Mostly correct visuals and tables       | Incorrect or missing visuals/data |
|                                                       | Analysis of Quantitative Arguments | Logical interpretation using numerical and graphical data         | Some quantitative reasoning             | Weak or flawed analysis           |
|                                                       | Application of Models              | Correct application of quantitative models; clear explanation     | Partial application; reasonable attempt | Incorrect or absent modeling      |
| <b>Personal &amp; Social Responsibility<br/>(20%)</b> | Intercultural / Ethical Reasoning  | Insightful, culturally sensitive, ethically grounded analysis     | Adequate discussion; some awareness     | Superficial or missing            |

| Skill Area<br>(Weight) | Criteria                         | Excellent (A)                                                  | Proficient (B–C)                     | Emerging (D)                    |
|------------------------|----------------------------------|----------------------------------------------------------------|--------------------------------------|---------------------------------|
|                        | Sustainability Insight           | Clearly connects content to environmental and societal impacts | Basic connections made               | Weak or no connection           |
|                        | Civic & Collaborative Competence | Strong engagement in group work and civic responsibility       | Some participation and collaboration | Minimal awareness or engagement |

## **Full Sample Assessment for Introduction to Environmental Science**

### **ENVS 1110C: Environmental Science I**

#### **Final Project**

#### **General Education Area: Science**

#### **Essential Skills: Critical Thinking, Quantitative Reasoning and Personal & Social Responsibility**

### **1. Assessment Overview**

This comprehensive assessment evaluates students' ability to analyze an environmental problem using scientific evidence, quantitative reasoning, effective communication, ethical understanding, and collaborative or civic-minded thinking.

Assessment Type: Case Study Analysis + Quantitative Data Interpretation + Argumentative Communication

Weight: 20–25% of course grade

Format: Written report (4–6 pages) OR presentation + written brief

Skills Assessed:

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

### **2. Sample Assessment Prompt**

#### **Environmental Case Study Assessment: Water Quality and Community Sustainability**

You are an environmental scientist tasked with evaluating the declining water quality of Clearwater River, which supplies drinking water to over 80,000 residents. Recent community reports indicate increased turbidity, elevated nitrate levels, and seasonal algal blooms.

Your assignment is to develop a scientific, ethical, and community-centered analysis addressing the environmental problem and proposing a sustainable solution.

---

#### **Part 1: Problem Setting (Critical Thinking)**

Identify and define the environmental problem by addressing:

- The key symptoms and indicators of the water-quality issue
  - Possible natural and human-driven causes
  - Questions that must be answered to investigate the issue further
-

## **Part 2: Evidence Acquisition (Critical Thinking)**

Using the provided dataset (see Section 3), gather and summarize evidence by:

- Identifying relevant parameters
  - Describing trends in nitrate, turbidity, and algal biomass
  - Referencing at least three credible scientific or regulatory sources
- 

## **Part 3: Evidence Evaluation (Critical Thinking)**

Evaluate the quality and reliability of the evidence by:

- Comparing conflicting data or seasonal variation
  - Discussing uncertainty, sampling limitations, or measurement bias
  - Assessing how different stakeholders (residents, farmers, regulators) may interpret the data
- 

## **Part 4: Quantitative Analysis (Quantitative Reasoning)**

Using the dataset:

1. Create at least two graphical representations (line graph, bar chart, or scatter plot).
  2. Analyze the quantitative argument that “agricultural runoff is the primary cause” using numerical evidence.
  3. Apply a simple model (e.g., nitrate loading or algal growth rate) to support or refute the argument.
- 

## **Part 5: Reasoning and Conclusion (Critical Thinking)**

Synthesize your findings and develop a logical, evidence-based conclusion that:

- Identifies the most likely causes
  - Proposes at least two realistic remediation strategies
  - Explains the scientific basis for your recommendations
- 

## **Part 6: Personal & Social Responsibility**

Address the social, cultural, and ethical dimensions of the issue by discussing:

- The impact on different communities (e.g., rural vs. urban, farmers, Tribal communities)



- Ethical considerations in environmental decision-making
- Sustainability implications for water, land, and food systems
- Roles of civic engagement and policy in addressing water-quality challenges

---

### 3. Provided Sample Dataset (for Student Use)

Clearwater River Monthly Data (Simplified)

| Month | Nitrate (mg/L) | Turbidity (NTU) | Algal Biomass (mg/m <sup>3</sup> ) |
|-------|----------------|-----------------|------------------------------------|
| Jan   | x              | x               | x                                  |
| Feb   | x              | x               | x                                  |
| Mar   | x              | x               | x                                  |
| Apr   | x              | x               | x                                  |
| May   | x              | x               | x                                  |
| Jun   | x              | x               | x                                  |
| Jul   | x              | x               | x                                  |
| Aug   | x              | x               | x                                  |
| Sep   | x              | x               | x                                  |
| Oct   | x              | x               | x                                  |
| Nov   | x              | x               | x                                  |
| Dec   | x              | x               | x                                  |



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5643                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2025-12-21 03:53 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Science

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

ENVS

---

### Number

1110L

---

### Title

ENVS 1110L. Environmental Science I Laboratory

---

### Number of credits

1

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

ENVS

---

### Number

1110L

---

### Title

ENVS 1110L. Environmental Science I Laboratory

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

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

1. Students will exercise and develop communication skills in public speaking, technical writing, and research documentation.
2. Students will be relating current environmental issues to their personal, economic, and cultural circumstances.
3. Students will garner assessment and problem-solving skills in areas relevant to health, quality of life, economic development, and cultural preservation.

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

N/A

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

#### Problem Setting:

In the laboratory, students investigate real-world environmental scenarios—such as water contamination, air pollution, or soil degradation—through hands-on experiments and measurements. They plan experiments to identify key scientific and societal factors, formulate testable questions, and determine which variables and processes require measurement. Instructors assess problem-setting skills through lab protocols, experimental design submissions, and pre-lab planning exercises, focusing on students' ability to define measurable objectives and select appropriate methods.

#### Evidence Acquisition:

Students collect experimental data using techniques such as water or soil sampling, pH and conductivity measurements, turbidity or particulate analysis, and simple chemical assays. Lab work may also include using sensors, field kits, or virtual simulations to monitor environmental parameters. Emphasis is placed on accurate measurement, proper calibration, and systematic data recording. Instructors assess learning through laboratory notebooks, data sheets, and guided exercises, evaluating precision, completeness, and proper methodology in evidence collection.

#### Evidence Evaluation:

Students analyze collected laboratory data to assess quality, consistency, and reliability. They identify sources of error, consider experimental uncertainties, and compare results with established standards or literature values. Students discuss discrepancies, evaluate alternative interpretations, and determine which evidence best supports environmental conclusions. Instructors assess this skill through lab reports, data analysis worksheets, and oral or written reflections, emphasizing critical evaluation, identification of limitations, and justification of conclusions.

### Reasoning and Conclusion:

Students synthesize laboratory findings to draw evidence-based conclusions about environmental conditions or remediation strategies. They interpret results, explain observed trends, and propose recommendations for environmental management. Lab reports, oral presentations, and group discussions require students to communicate conclusions clearly, support them with quantitative and qualitative evidence, and reflect on the broader implications of their findings. Instructors assess reasoning and conclusion skills by evaluating clarity, data integration, logical argumentation, and evidence-based recommendations.

---

### **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

#### Communication and Representation of Quantitative Information:

In the laboratory, students organize and present quantitative environmental data collected from experiments, such as water-quality measurements (pH, turbidity, contaminants), air-pollution indicators (particulate matter, CO<sub>2</sub> levels), and soil nutrient or contaminant concentrations. They construct tables, generate graphs, and create visual representations such as concentration curves, flow diagrams, and mass-balance charts to display trends and patterns. Lab reports, data sheets, and short writing exercises require students to explain observed trends, interpret experimental results, and communicate findings accurately using quantitative language. Instructors assess this skill by evaluating clarity, precision, and effective presentation of laboratory data in reports and presentations.

#### Analysis of Quantitative Arguments:

Students critically analyze experimental data to determine whether their results support expected outcomes or hypotheses. They identify potential sources of measurement error, examine consistency across replicates, and assess the reliability and limitations of their quantitative findings. Students compare observed results to reference standards or literature values and evaluate whether the evidence supports conclusions about environmental conditions or remediation effectiveness. Instructors assess this skill through lab reports, data analysis exercises, and group discussions, focusing on accuracy, logical interpretation, and evidence-based evaluation of experimental results.

#### Application of Quantitative Models:

Students apply basic quantitative models to interpret laboratory data and predict environmental system behavior. Models may include pollutant transport calculations, dilution or concentration estimations, energy or nutrient balance analyses, and simple ecological or population models. Through guided experiments and case-based exercises, students explore how changing variables affect outcomes and use models to support conclusions about environmental processes or remediation strategies. Instructors assess this skill through lab assignments, modeling exercises, and case-study reports, emphasizing correct application, interpretation of results, and understanding the limitations and assumptions of quantitative models.

---

### **Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

#### Intercultural Reasoning and Intercultural Competence:

In the laboratory, students examine environmental samples and experimental scenarios that reflect diverse regions and communities, such as testing water quality from different sources or analyzing soil and air samples from varied ecological contexts. Through group experiments, discussions, and lab report reflections, students consider cultural practices, traditional ecological knowledge, and the societal implications of environmental results. Instructors assess learning through lab reports, group presentations, and reflective exercises, focusing on students' ability to integrate cultural context into experimental interpretation and demonstrate intercultural competence in environmental problem-solving.

Sustainability and the Natural and Human Worlds:

Students apply sustainable practices in the laboratory by handling chemicals and materials responsibly, minimizing waste, and using safer reagents and procedures where feasible. Experiments are designed to connect lab results to real-world resource management, energy use, pollution mitigation, and ecological health. Students analyze how experimental outcomes relate to broader environmental and societal impacts, considering implications for long-term sustainability. Instructors assess sustainability awareness through lab reports, participation in environmentally responsible lab practices, and reflective exercises, emphasizing students' ability to link experimental work to sustainable solutions and responsible stewardship of natural and human systems.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2025-12-21 03:53 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2025-12-21 03:53 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2025-12-21 03:47 PM (US/Mountain) |



## **Full Sample Assessment for Introduction to Environmental Science**

### **ENVS 1110C: Environmental Science I**

#### **Final Project**

#### **General Education Area: Science**

#### **Essential Skills: Critical Thinking, Quantitative Reasoning and Personal & Social Responsibility**

### **1. Assessment Overview**

This comprehensive assessment evaluates students' ability to analyze an environmental problem using scientific evidence, quantitative reasoning, effective communication, ethical understanding, and collaborative or civic-minded thinking.

Assessment Type: Case Study Analysis + Quantitative Data Interpretation + Argumentative Communication

Weight: 20–25% of course grade

Format: Written report (4–6 pages) OR presentation + written brief

Skills Assessed:

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

### **2. Sample Assessment Prompt**

#### **Environmental Case Study Assessment: Water Quality and Community Sustainability**

You are an environmental scientist tasked with evaluating the declining water quality of Clearwater River, which supplies drinking water to over 80,000 residents. Recent community reports indicate increased turbidity, elevated nitrate levels, and seasonal algal blooms.

Your assignment is to develop a scientific, ethical, and community-centered analysis addressing the environmental problem and proposing a sustainable solution.

---

#### **Part 1: Problem Setting (Critical Thinking)**

Identify and define the environmental problem by addressing:

- The key symptoms and indicators of the water-quality issue
  - Possible natural and human-driven causes
  - Questions that must be answered to investigate the issue further
-

## **Part 2: Evidence Acquisition (Critical Thinking)**

Using the provided dataset (see Section 3), gather and summarize evidence by:

- Identifying relevant parameters
  - Describing trends in nitrate, turbidity, and algal biomass
  - Referencing at least three credible scientific or regulatory sources
- 

## **Part 3: Evidence Evaluation (Critical Thinking)**

Evaluate the quality and reliability of the evidence by:

- Comparing conflicting data or seasonal variation
  - Discussing uncertainty, sampling limitations, or measurement bias
  - Assessing how different stakeholders (residents, farmers, regulators) may interpret the data
- 

## **Part 4: Quantitative Analysis (Quantitative Reasoning)**

Using the dataset:

1. Create at least two graphical representations (line graph, bar chart, or scatter plot).
  2. Analyze the quantitative argument that “agricultural runoff is the primary cause” using numerical evidence.
  3. Apply a simple model (e.g., nitrate loading or algal growth rate) to support or refute the argument.
- 

## **Part 5: Reasoning and Conclusion (Critical Thinking)**

Synthesize your findings and develop a logical, evidence-based conclusion that:

- Identifies the most likely causes
  - Proposes at least two realistic remediation strategies
  - Explains the scientific basis for your recommendations
- 

## **Part 6: Personal & Social Responsibility**

Address the social, cultural, and ethical dimensions of the issue by discussing:

- The impact on different communities (e.g., rural vs. urban, farmers, Tribal communities)

- Ethical considerations in environmental decision-making
  - Sustainability implications for water, land, and food systems
  - Roles of civic engagement and policy in addressing water-quality challenges
- 

**3. Provided Sample Dataset (for Student Use)**

Clearwater River Monthly Data (Simplified)

| Month | Nitrate (mg/L) | Turbidity (NTU) | Algal Biomass (mg/m <sup>3</sup> ) |
|-------|----------------|-----------------|------------------------------------|
| Jan   | x              | x               | x                                  |
| Feb   | x              | x               | x                                  |
| Mar   | x              | x               | x                                  |
| Apr   | x              | x               | x                                  |
| May   | x              | x               | x                                  |
| Jun   | x              | x               | x                                  |
| Jul   | x              | x               | x                                  |
| Aug   | x              | x               | x                                  |
| Sep   | x              | x               | x                                  |
| Oct   | x              | x               | x                                  |
| Nov   | x              | x               | x                                  |
| Dec   | x              | x               | x                                  |



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5644                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2025-12-21 04:12 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Science

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

ENVS

---

### Number

1120

---

### Title

Environmental Science II

---

### Number of credits

3

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

ENVS

---

### Number

1120

---

### Title

Environmental Science II

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

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

1. Students exercise and develop communication skills in public speaking, technical writing, and research documentation.
2. Students expand their abilities to relate current environmental issues to general economic, social, and legal circumstances.
3. Students identify the political and legal contexts of environmental policies, and to be able to articulate the relative importance of each.
4. Students understand linkages between environmental issues at Tribal, State, National, and International contexts.

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

N/A

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

#### Problem Setting:

In the lecture course, students develop critical thinking by analyzing real-world environmental scenarios such as water contamination, air pollution, or soil degradation. They identify key scientific, societal, and regulatory components, define the scope of the problem, formulate focused research questions, and recognize relevant stakeholders, including tribal communities, regulatory agencies, and local populations. Emphasis is placed on understanding historical, social, and cultural contexts that influence environmental decision-making. Learning is assessed through written problem statements, case-study analyses, and class discussions, with rubrics evaluating clarity, completeness, relevance, and contextual awareness.

#### Evidence Acquisition:

Students learn to gather credible and relevant evidence from multiple sources, including scientific literature, monitoring datasets, regulatory reports, and community-based knowledge. They distinguish between qualitative and quantitative data, primary and secondary sources, and scientific versus policy-based evidence. Ethical and culturally respectful data collection is emphasized, particularly in contexts involving tribal communities. Assessment focuses on students' ability to locate reliable sources, justify evidence selection, and document findings appropriately. Evaluations include annotated bibliographies, data summaries, and evidence portfolios, with rubrics emphasizing relevance, diversity, and credibility of sources.

#### Evidence Evaluation:

Students critically assess the quality, reliability, and limitations of evidence, considering factors such as methodological rigor, sample size, assumptions, and potential bias. They synthesize multiple sources, evaluate conflicting information, and consider how different stakeholders might interpret data differently. Assessment

includes critical reviews, comparative analyses, and discussion contributions, with rubrics evaluating analytical depth, accuracy, and logical consistency.

#### Reasoning and Conclusion:

Students integrate evaluated evidence to form logical, evidence-based conclusions and propose environmentally responsible solutions. Instruction emphasizes connecting conclusions to data, weighing alternatives, assessing impacts on communities and ecosystems, and justifying recommendations under uncertainty. Assessment occurs through written reports, presentations, and class discussions, focusing on clarity, use of evidence, acknowledgment of limitations, and effective communication to both technical and non-technical audiences.

---

### **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

#### Communication and Representation of Quantitative Information

Students develop quantitative reasoning by interpreting, organizing, and communicating numerical and graphical environmental data. They work with tables, graphs, maps, and basic statistical summaries (e.g., averages, trends, and rates) to represent measurements such as pollutant concentrations, energy outputs, land-use changes, and mitigation outcomes. Emphasis is placed on presenting quantitative information clearly and appropriately for technical reports, policy discussions, and community decision-making. Learning is assessed through data visualization exercises, short written reports, and presentations, with rubrics evaluating accuracy, clarity, proper units, and effective interpretation of quantitative information.

#### Analysis of Quantitative Arguments

Students critically evaluate quantitative arguments found in scientific studies, environmental assessments, and policy documents. They examine how numerical evidence supports claims, identify assumptions, assess calculation validity, and evaluate uncertainty or limitations in data. Students compare alternative quantitative arguments, particularly in scenarios involving trade-offs for tribal and local communities, and learn to determine which evidence is most reliable. Assessment includes problem-based exercises, written critiques, and exam questions that require students to explain reasoning, verify calculations, and evaluate the strength of numerical evidence in supporting environmental decisions.

#### Application of Quantitative Models

Students apply quantitative models to environmental problems, including estimating pollutant loads, energy production efficiency, and mitigation effectiveness. They use simplified equations, scenario analyses, and spreadsheet tools to predict outcomes and evaluate management options. Learning is assessed through applied problem sets, case-study exercises, and project-based assignments that evaluate correct model use, interpretation of results, and justification of conclusions based on quantitative evidence.

---

### **Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

#### Intercultural Reasoning and Intercultural Competence

Students develop intercultural competence by examining environmental issues affecting tribal and culturally diverse communities. They explore how cultural values, traditional ecological knowledge, governance structures, and community priorities shape environmental decision-making. Case studies, class discussions, and scenario analyses emphasize respectful engagement, tribal sovereignty, and recognition of multiple worldviews. Assessment includes reflective essays, case-study analyses, and discussion participation, with rubrics evaluating cultural awareness, sensitivity, and the ability to integrate intercultural perspectives into environmental reasoning.



#### Collaboration Skills, Teamwork, and Value Systems

Students engage in collaborative activities to analyze environmental problems, evaluate data, and propose solutions. They practice clear and respectful communication, equitable division of responsibilities, and constructive conflict resolution. Group discussions, project-based assignments, and peer evaluations are used to assess teamwork, individual contributions, and the ability to solve problems collaboratively. Rubrics emphasize accountability, professionalism, and the capacity to work effectively in diverse teams while considering ethical, social, and environmental responsibilities.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2025-12-21 04:12 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2025-12-21 04:12 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2025-12-21 03:56 PM (US/Mountain) |

## **Full Sample Assessment for Introduction to Environmental Science II**

Course: ENVS 1120C – Environmental Science II

Project Type: Individual or Small Group Project (2–3 students)

General Education Area: Science

Essential Skills Addressed: Critical Thinking, Quantitative Reasoning, and Personal & Social Responsibility

---

### **Final Project: Environmental Impact Assessment of a Local Mining Site**

#### **Instructions:**

For your final project, you will conduct an **Environmental Impact Assessment (EIA)** for a hypothetical or real mining site that affects a local or tribal community. This project is designed to give you hands-on experience in the kinds of analysis and decision-making conducted by environmental science professionals. You will integrate scientific reasoning, quantitative analysis, sustainability principles, and social responsibility to propose evidence-based solutions.

Your work should reflect careful attention to environmental, social, and regulatory considerations, with particular focus on community and tribal impacts.

---

### **Project Components and Instructions**

#### **Part I: Problem Definition (Critical Thinking)**

1. Describe the mining site, including location and environmental context.
2. Identify all relevant stakeholders (tribal communities, regulatory agencies, local residents, industry).
3. Clearly define the environmental problem(s) you are investigating (e.g., water contamination, soil degradation, air pollution).
4. Formulate 2–3 focused research questions to guide your assessment.

**Deliverable:** A 2-page written problem statement.

---

#### **Part II: Evidence Collection and Evaluation (Critical Thinking)**

1. Gather data relevant to your problem, including water, soil, air, or biodiversity metrics.
2. Use credible sources: peer-reviewed literature, government or tribal environmental reports, and monitoring datasets.
3. Critically evaluate the reliability, limitations, and potential biases of your sources.

**Deliverable:** Annotated bibliography (minimum 6 sources) and a 2-page evidence evaluation summary.

---

### **Part III: Quantitative Analysis (Quantitative Reasoning)**

1. Organize and analyze environmental data using tables, graphs, or maps.
2. Perform calculations such as pollutant concentrations, load estimates, emission rates, or land disturbance metrics.
3. Interpret results, noting uncertainties and implications for the environment and stakeholders.

**Deliverable:** 2-page quantitative analysis section with figures and calculations.

---

### **Part IV: Sustainability and Ethical Considerations (Personal & Social Responsibility)**

1. Evaluate potential environmental, social, and economic impacts of the mining activity.
2. Analyze ethical issues, including environmental justice and long-term consequences.
3. Incorporate community and tribal values where relevant.

**Deliverable:** 1–2 page sustainability and ethics analysis.

---

### **Part V: Proposed Solution and Conclusion (Integration)**

1. Recommend feasible mitigation, management, or policy measures.
2. Justify your recommendations using evidence and quantitative results.
3. Discuss trade-offs, uncertainties, and potential impacts on stakeholders.

**Deliverable:** 1–2 page conclusion and proposed solution section.

---

## **Part VI: Presentation**

1. Prepare an 8–10-minute oral presentation with visuals summarizing your findings and recommendations.
  2. Present professionally to both technical and community audiences.
- 

### **General Guidelines:**

- Follow proper citation and academic integrity standards.
- Use clear, concise, and organized writing.
- Integrate evidence and quantitative analysis to support all claims.
- Pay attention to formatting, clarity, and visual presentation of data.

This project is your opportunity to demonstrate mastery of **critical thinking, quantitative reasoning, sustainability awareness, and civic responsibility** in environmental science.



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5645                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2025-12-21 04:18 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Science

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

ENVS

---

### Number

1120L

---

### Title

Environmental Science II Laboratory

---

### Number of credits

1

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

ENVS

---

### Number

1120L

---

### Title

Environmental Science II Laboratory

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility



## Section B. Learning Outcomes

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

#### Student Learning Outcomes

1. Students gain experience and understanding of Environmental Science as a discipline, including scientific reasoning, key concepts, terminology, and social context.
2. Students acquire vocabulary and technical understanding of climate, weather, biogeography and ecological principles.
3. Students appropriately interpret risk assessment results, discussing the implications and limitations of methods for governing contemporary environmental challenges.
4. Students independently design and execute a laboratory experiment utilizing discipline standard procedures.

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

N/A

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

#### Problem Setting:

In the laboratory course, students develop critical thinking by investigating real-world environmental problems, such as water contamination, soil pollution, or air-quality issues, through hands-on experiments and field-simulated sampling. They define the scope of each problem, formulate focused research questions, and identify relevant stakeholders, including tribal communities, regulatory agencies, and local populations. Emphasis is placed on understanding environmental, social, and cultural contexts that influence decision-making. Learning is assessed through written problem statements, lab reports, and pre-lab discussions, with rubrics evaluating clarity, completeness, and contextual awareness.

#### Evidence Acquisition:

Students gather credible and relevant evidence through direct measurement and laboratory experimentation, including chemical and physical analyses of water, soil, and air samples. They also consult monitoring datasets, regulatory reports, and community-based information as supporting evidence. Students distinguish between qualitative and quantitative data, primary and secondary sources, and scientific versus policy-based evidence. Ethical and culturally respectful practices are emphasized during data collection, especially in contexts involving tribal communities. Assessment focuses on proper data collection, accurate recording, and justification of evidence, with lab notebooks, annotated data tables, and summaries serving as evaluation tools.

#### Evidence Evaluation:

Students critically assess the quality, reliability, and limitations of laboratory and supporting data. They analyze

measurement accuracy, sample validity, uncertainties, and potential biases, and compare findings to reference values or expected trends. Students consider how different stakeholders might interpret data differently, especially in cases involving environmental and community impacts. Assessment includes lab reports, data critiques, and discussion participation, with rubrics emphasizing analytical depth, logical reasoning, and reliability of conclusions.

#### Reasoning and Conclusion:

Students synthesize experimental evidence to draw logical, evidence-based conclusions and propose practical, environmentally responsible solutions. They interpret quantitative results, consider alternative approaches, evaluate potential ecological and community impacts, and justify recommendations under uncertainty. Assessment occurs through final lab reports, presentations, and oral discussions, focusing on clarity, integration of data, acknowledgment of limitations, and effective communication to both technical and non-technical audiences.

---

### **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

#### Communication and Representation of Quantitative Information

In the laboratory course, students develop quantitative reasoning by collecting, organizing, and communicating numerical and graphical data from experiments and field simulations. They work with tables, graphs, charts, and maps to represent measurements such as pollutant concentrations, soil or water chemistry, energy outputs, and land-use impacts. Emphasis is placed on accurately presenting quantitative data in lab reports and discussions, including proper units, significant figures, and clear visual representation. Learning is assessed through lab notebooks, data tables, graphs, and short lab reports, with rubrics evaluating accuracy, clarity, and effective interpretation of results.

#### Analysis of Quantitative Arguments

Students critically evaluate quantitative evidence obtained from laboratory measurements and supporting datasets. They examine how data support scientific claims, identify assumptions, assess calculation accuracy, and evaluate sources of error or uncertainty. Students compare results across replicates, identify inconsistencies, and determine the reliability of measurements in environmental contexts, including considerations for tribal and local community impacts. Assessment includes lab exercises, written critiques, and discussion participation, with rubrics emphasizing logical reasoning, accuracy, and evidence-based evaluation.

#### Application of Quantitative Models

Students apply basic quantitative models to interpret and predict outcomes of environmental experiments. They use calculations, simplified equations, and spreadsheet analyses to estimate pollutant loads, reaction rates, energy outputs, or mitigation effectiveness. Students interpret results within the context of laboratory and field observations, recognize limitations, and justify conclusions using quantitative evidence. Learning is assessed through lab reports, problem sets, and case-study exercises, focusing on correct model application, result interpretation, and the ability to draw evidence-based conclusions.

---

### **Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

#### Intercultural Reasoning and Intercultural Competence

In the laboratory course, students develop intercultural competence by examining environmental issues through hands-on experiments and field simulations that involve tribal or culturally diverse community contexts. They explore how cultural values, traditional ecological knowledge, governance structures, and

community priorities can influence environmental measurements, data interpretation, and decision-making. Lab exercises, group experiments, and scenario-based tasks emphasize respectful engagement, tribal sovereignty, and consideration of multiple worldviews. Assessment includes lab reflections, data interpretation exercises with community context, and participation in group discussions, with rubrics evaluating cultural awareness, sensitivity, and the integration of intercultural perspectives into experimental reasoning.

#### Collaboration Skills, Teamwork, and Value Systems

Students work collaboratively in lab teams to plan and execute experiments, collect and analyze data, and propose evidence-based environmental solutions. They practice clear and respectful communication, equitable division of tasks, and constructive conflict resolution while completing hands-on activities. Assessment includes lab notebooks, group reports, peer evaluations, and in-lab participation, with rubrics emphasizing accountability, professionalism, teamwork, and the ability to collaborate effectively in diverse groups while considering ethical, social, and environmental responsibilities.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2025-12-21 04:18 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2025-12-21 04:18 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2025-12-21 04:12 PM (US/Mountain) |

## **Full Sample Assessment for Introduction to Environmental Science II**

Course: ENVS 1120C – Environmental Science II

Project Type: Individual or Small Group Project (2–3 students)

General Education Area: Science

Essential Skills Addressed: Critical Thinking, Quantitative Reasoning, and Personal & Social Responsibility

---

### **Final Project: Environmental Impact Assessment of a Local Mining Site**

#### **Instructions:**

For your final project, you will conduct an **Environmental Impact Assessment (EIA)** for a hypothetical or real mining site that affects a local or tribal community. This project is designed to give you hands-on experience in the kinds of analysis and decision-making conducted by environmental science professionals. You will integrate scientific reasoning, quantitative analysis, sustainability principles, and social responsibility to propose evidence-based solutions.

Your work should reflect careful attention to environmental, social, and regulatory considerations, with particular focus on community and tribal impacts.

---

#### **Project Components and Instructions**

##### **Part I: Problem Definition (Critical Thinking)**

1. Describe the mining site, including location and environmental context.
2. Identify all relevant stakeholders (tribal communities, regulatory agencies, local residents, industry).
3. Clearly define the environmental problem(s) you are investigating (e.g., water contamination, soil degradation, air pollution).
4. Formulate 2–3 focused research questions to guide your assessment.

**Deliverable:** A 2-page written problem statement.

---

##### **Part II: Evidence Collection and Evaluation (Critical Thinking)**

1. Gather data relevant to your problem, including water, soil, air, or biodiversity metrics.
2. Use credible sources: peer-reviewed literature, government or tribal environmental reports, and monitoring datasets.
3. Critically evaluate the reliability, limitations, and potential biases of your sources.

**Deliverable:** Annotated bibliography (minimum 6 sources) and a 2-page evidence evaluation summary.

---

### **Part III: Quantitative Analysis (Quantitative Reasoning)**

1. Organize and analyze environmental data using tables, graphs, or maps.
2. Perform calculations such as pollutant concentrations, load estimates, emission rates, or land disturbance metrics.
3. Interpret results, noting uncertainties and implications for the environment and stakeholders.

**Deliverable:** 2-page quantitative analysis section with figures and calculations.

---

### **Part IV: Sustainability and Ethical Considerations (Personal & Social Responsibility)**

1. Evaluate potential environmental, social, and economic impacts of the mining activity.
2. Analyze ethical issues, including environmental justice and long-term consequences.
3. Incorporate community and tribal values where relevant.

**Deliverable:** 1–2 page sustainability and ethics analysis.

---

### **Part V: Proposed Solution and Conclusion (Integration)**

1. Recommend feasible mitigation, management, or policy measures.
2. Justify your recommendations using evidence and quantitative results.
3. Discuss trade-offs, uncertainties, and potential impacts on stakeholders.

**Deliverable:** 1–2 page conclusion and proposed solution section.

---

## **Part VI: Presentation**

1. Prepare an 8–10-minute oral presentation with visuals summarizing your findings and recommendations.
  2. Present professionally to both technical and community audiences.
- 

### **General Guidelines:**

- Follow proper citation and academic integrity standards.
- Use clear, concise, and organized writing.
- Integrate evidence and quantitative analysis to support all claims.
- Pay attention to formatting, clarity, and visual presentation of data.

This project is your opportunity to demonstrate mastery of **critical thinking, quantitative reasoning, sustainability awareness, and civic responsibility** in environmental science.



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5647                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2025-12-21 05:15 PM (US/Mountain) |



# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Science

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

PHYS

---

### Number

1230C

---

### Title

Algebra-based Physics I Lecture + Laboratory

---

### Number of credits

4

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

PHYS

---

### Number

1230C

---

### Title

Algebra-based Physics I Lecture + Laboratory

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

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

#### Lecture Outcomes

Upon completion of this course, the student will be able to:

1. Demonstrate converting units and other aspects of dimensional analysis in the working of numerical problems.
2. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of particles in one and two dimensions.
3. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of a rigid body in two dimensions.
4. Apply Newton's theory of gravitation to circular orbits and demonstrate understanding of how Kepler's laws of planetary motion provide the empirical foundation for Newton's theory.
5. Apply the mathematics of vectors to the principles of Newtonian mechanics.
6. Apply principles of Newtonian mechanics to the case of static and dynamic incompressible fluids, including Archimedes' and Bernoulli's principles.

#### Laboratory Outcomes

Upon completion of this course, the student will be able to:

1. Explain the scientific method.
2. Test ideas using modern laboratory equipment.
3. Estimate experimental uncertainties using statistical methods.
4. Use computers to analyze and report laboratory results.
5. Draw appropriate conclusions from quantitative scientific observations.
6. Accurately and clearly communicate the results of scientific experiments.

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

N/A

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

#### Problem Setting

Students define and frame physics problems in both lecture and laboratory contexts. In lecture, students identify knowns, unknowns, assumptions, and relevant variables for problems involving motion, forces, energy, momentum, and fluids. In the lab, students formulate investigable questions and design experimental objectives to guide their investigations. Students' problem-setting skills are assessed through lab reports, in-class exercises, and homework, using rubrics that measure clarity, completeness, and contextual understanding.

### Evidence Acquisition

Students collect quantitative and qualitative data using laboratory equipment, structured data sheets, and references from lecture materials and theoretical models. They select appropriate measurements, record observations accurately, and organize data systematically. Assessment occurs through submitted lab data, lab reports, and guided homework, with rubrics evaluating accuracy, relevance, and thorough documentation.

### Evidence Evaluation

Students analyze and interpret collected data, estimate uncertainties, identify sources of error, and compare results with theoretical predictions. They examine assumptions in models and measurements and assess the reliability and relevance of their evidence. Their evaluation skills are measured through lab report analyses, quizzes, and exam questions, focusing on logical reasoning and critical appraisal of data.

### Reasoning and Conclusion

Students synthesize experimental results and theoretical concepts to draw evidence-based conclusions, justify outcomes, and explain discrepancies. Students connect conclusions to the original problem, highlighting physical meaning and implications. Assessment is conducted through lab reports, problem-based assignments, and exams, with rubrics evaluating logical coherence, use of evidence, and defensibility of conclusions.

---

## **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

### Communication and Representation of Quantitative Information

Students represent quantitative information clearly using algebraic equations, vector notation, graphs, tables, and appropriate units. In the lab, students record measurements, calculate uncertainties, and present results systematically. Laboratory reports and data exercises require students to communicate findings accurately, highlighting trends, relationships, and physical meaning. Skills are assessed through lab reports, homework, quizzes, and exams, using rubrics that evaluate clarity, correctness, and completeness of quantitative representation.

### Analysis of Quantitative Arguments

Students interpret, evaluate, and critique numerical data and arguments from textbooks, peer work, lab experiments, and problem sets. Students check calculations, assess consistency between evidence and conclusions, and identify errors or incorrect assumptions. Assessment occurs through problem-solving exercises, written critiques, lab discussions, and exams, with rubrics focusing on logical reasoning, accuracy, and evidence-based evaluation.

### Application of Quantitative Models

Students apply appropriate quantitative models, including kinematic equations, Newton's laws, conservation principles, and fluid dynamics, to solve both theoretical and experimental problems. Students select models, perform computations, and interpret results in context. Ability to use models effectively is assessed through lab assignments, MasteringPhysics homework, case studies, and exams, with rubrics evaluating model selection, accuracy of calculations, and validity of interpretations.

---

## **Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

### Collaboration Skills, Teamwork, and Value Systems

Students work effectively in small groups during laboratory activities, share responsibilities, follow safety protocols, and engage respectfully in scientific discussions. Students hold themselves accountable by

completing independent lab report submissions and contributing equitably to group tasks.

#### Sustainability and the Natural and Human Worlds

Students analyze connections between physics concepts—such as energy, motion, and fluid dynamics—and real-world sustainability challenges, including environmental, technological, and community-relevant contexts. Students apply physics principles to evaluate responsible decision-making and consider the broader impacts of scientific practices on society and the environment.

Students' personal and social responsibility is evaluated through laboratory participation, reflective lab report components, and course activities. Rubrics emphasize ethical conduct, collaborative engagement, shared accountability, and thoughtful application of physics in societal and environmental context

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2025-12-21 05:15 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2025-12-21 05:15 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2025-12-21 04:57 PM (US/Mountain) |

## Sample Assessment – Critical Thinking

**Course:** PHYS 1230C – Algebra-Based Physics I with Lab

**Content Area:** Science

**Essential Skill Assessed:** Critical Thinking

**Assessment Type:** Individual Laboratory Investigation and Written Laboratory Report

**Rubric Used:** NMHED / Navajo Technical University Critical Thinking Rubric

---

### Assessment Overview

You will demonstrate your critical thinking skills by completing an individual laboratory investigation focused on Newtonian mechanics. In this lab, you will design and conduct an experiment, analyze quantitative data, evaluate evidence, and develop reasoned conclusions. This assessment addresses all four NMHED Critical Thinking component skills: Problem Setting, Evidence Acquisition, Evidence Evaluation, and Reasoning/Conclusion.

---

### Laboratory Experiment: Free Fall Motion – Determination of Gravitational Acceleration ( $g$ )

In this experiment, you will investigate free-fall motion by measuring distance and time. You will connect lecture concepts of Newtonian mechanics to hands-on experimental practice and apply scientific reasoning to interpret your results.

---

### Instructions for Students

You must submit an individual laboratory report containing the following sections:

#### 1. Problem Setting

- Clearly state your research question (e.g., *How can the acceleration due to gravity be determined from free-fall motion?*).
- Identify the relevant variables, assumptions, and experimental objectives.

#### 2. Evidence Acquisition

- Collect **accurate measurements** of time and distance using lab equipment.
- Record your data systematically in tables or charts.

- Apply appropriate physics relationships to generate usable evidence for your investigation.

### **3. Evidence Evaluation**

- Evaluate your data for credibility, reliability, and relevance.
- Estimate experimental uncertainties and identify sources of error.
- Compare your results with theoretical predictions to determine if your evidence supports the expected physical behavior.

### **4. Reasoning and Conclusion**

- Calculate the experimental value of  $g$  and compare it with the accepted value.
- Interpret discrepancies and explain possible reasons.
- Justify your conclusions using the evidence you collected.
- Reflect on the limitations of your experiment and the implications of your results.





# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5648                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2025-12-21 05:34 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

Colleen Bowman

### Chief Academic Officer Email

cbowman@navajotech.edu

### Registrar Name

Jason Wright

### Registrar Email

jasonwright@navajotech.edu

### Course's Academic Department

Science

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

PHYS

### Number

1240C

### Title

Igebra-based Physics II Lecture + Laboratory

### Number of credits

4

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

No

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

PHYS

---

### Number

1240C

---

### Title

Algebra-based Physics II Lecture + Laboratory

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

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

#### Lecture Outcomes

1. Be able to state Coulomb's Law and Gauss's laws and apply them.
2. Apply the concepts of electric charge, electric field and electric potential to solve problems.
3. Analyze simple DC and AC circuits.
4. Apply the Lorentz force to solve problems.
5. Apply Faraday's law of induction (and Lenz's law) to solve problems.
6. Apply ray optics to practical lens systems such as microscopes and corrective lenses.
7. Apply the wave nature of light to the phenomena of reflection, refraction, and diffraction.

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

#### Lab Outcomes

Upon completion of this course, the student will be able to:

1. Explain the scientific method.
2. Test ideas using modern laboratory equipment.
3. Estimate experimental uncertainties using statistical methods.
4. Use computers to analyze and report laboratory results.
5. Draw appropriate conclusions from quantitative scientific observations.
6. Accurately and clearly communicate the results of scientific experiments.

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

#### Problem Setting:

Students define clear physics problems and research questions in both lecture and lab contexts. In lectures, they analyze concepts related to electric fields, circuits, magnetic forces, electromagnetic induction, and optics, identifying known quantities, unknowns, assumptions, and governing physical principles. In laboratory activities, students formulate investigable questions, design experimental objectives, and plan procedures appropriate to the physical context of each experiment.

#### Evidence Acquisition:

Students collect quantitative measurements using laboratory equipment such as voltmeters, ammeters, coils, and lenses. They record data systematically in tables or charts and reference theoretical models from lecture and course materials to support their analysis. Students demonstrate accuracy and consistency in measurement and data documentation.

#### Evidence Evaluation:

Students analyze collected data for credibility, reliability, and relevance. They estimate experimental

uncertainties, identify sources of systematic and random error, compare experimental results with theoretical predictions, and evaluate the validity of underlying assumptions in models and measurements.

#### Reasoning and Conclusion:

Students synthesize experimental results and theoretical reasoning to develop well-supported conclusions. They justify outcomes, explain discrepancies between measured and expected values, and articulate the physical meaning and limitations of their findings.

Instructors assess student learning through individual laboratory reports, problem-based homework, quizzes, and exams.

---

### **Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

#### Communication and Representation of Quantitative Information:

Students represent quantitative information symbolically, graphically, and in written form using algebraic equations, vector notation, circuit diagrams, graphs, tables, and appropriate units. They construct clear tables and graphs, display uncertainties, and explain results in laboratory reports.

#### Analysis of Quantitative Arguments:

Students interpret and critique quantitative arguments from textbooks, peer work, and experimental results. They examine mathematical logic, assess consistency between data and conclusions, and identify calculation or modeling errors.

#### Application of Quantitative Models:

Students select and apply appropriate quantitative models—including Coulomb's Law, circuit equations, Faraday's Law, and optical models—to solve experimental and contextual physics problems. They perform calculations, analyze results, and interpret physical meaning in real-world and laboratory contexts.

#### Assessment:

Instructors assess student learning through MasteringPhysics homework, laboratory reports, quizzes, and exams.

---

### **Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

#### Collaboration Skills, Teamwork, and Value Systems:

Students plan and conduct experiments in small groups, divide responsibilities, collect and analyze data, follow safety protocols, and engage respectfully in scientific discussions. They demonstrate accountability by submitting individual laboratory reports that reflect their own work while contributing to the group's success.

#### Sustainability and the Natural and Human Worlds:

Students analyze connections between physical principles—such as electric power, energy transfer, electromagnetic technologies, and optics—and sustainability in environmental, technological, and community contexts. They evaluate how physics informs responsible resource use, consider impacts of technology on human and natural systems, and reflect on ethical and societal implications of experimental and applied physics.

Instructors assess student learning through laboratory participation, adherence to ethical and professional scientific practices, individual lab reports with reflective components, and group-based activities. Evaluation emphasizes students' ability to collaborate effectively, take responsibility for their contribution

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2025-12-21 05:34 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2025-12-21 05:34 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2025-12-21 05:22 PM (US/Mountain) |

## **Sample Assessment – Critical Thinking**

**Course:** PHYS 1240C – Algebra-Based Physics II with Lab

**Content Area:** Science

**Essential Skill Assessed:** Critical Thinking

**Assessment Type:** Individual Laboratory Investigation and Written Laboratory Report

**Rubric Used:** NMHED / Navajo Technical University Critical Thinking Rubric

---

### **Instructions for Students**

This assessment is designed to evaluate your critical thinking skills through an individual laboratory investigation in electricity and magnetism. You will design and conduct experiments, analyze quantitative data, evaluate evidence, and develop well-reasoned conclusions. Your work will address all four NMHED Critical Thinking component skills: Problem Setting, Evidence Acquisition, Evidence Evaluation, and Reasoning/Conclusion.

---

### **Laboratory Experiment Example:**

#### **Verification of Ohm's Law and Analysis of Electrical Circuits**

You will investigate how current varies with applied voltage in resistive DC circuits. This lab will connect theoretical concepts from lecture with hands-on measurement and scientific reasoning.

---

### **Required Components for Your Individual Lab Report**

#### **1. Problem Setting**

- Clearly state your research question (e.g., “How does current vary with applied voltage in a resistive circuit?”).
- Identify relevant variables, assumptions, and set experimental objectives appropriate to the physics context.

#### **2. Evidence Acquisition**

- Collect and record voltage and current measurements using the appropriate laboratory instruments.
- Organize your data using tables and graphs.



- Apply relevant physics relationships to generate meaningful evidence for your investigation.

### **3. Evidence Evaluation**

- Assess your data for credibility, reliability, and relevance.
- Estimate uncertainties and identify possible sources of error.
- Evaluate whether your evidence adequately addresses the research question.

### **4. Reasoning and Conclusion**

- Develop conclusions based on a well-reasoned evaluation of your evidence.
- Compare experimental results to theoretical expectations.
- Explain any discrepancies and discuss the limitations and implications of your findings.

## CRITICAL THINKING RUBRIC

Adapted from NMHED Critical Thinking rubric • Navajo Technical University

Student:      Date:

| OUTCOMES                                                                                                      | SCALE                                                                                                                                             |                                                                                                                                                                                                          |                                                                                                                                                                                                             | SUBTOTALS & COMMENTS |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
|                                                                                                               | Emerging (1 pts)                                                                                                                                  | Developing (2 pts)                                                                                                                                                                                       | Proficient (3 pts)                                                                                                                                                                                          |                      |
| <b>Problem Setting</b><br><i>(Delineate a problem or question appropriate to context)</i>                     | Problem or research question is unclear or poorly defined; objectives missing or inappropriate                                                    | Problem is stated but lacks clarity or full contextual relevance                                                                                                                                         | <b>Problem/question is clearly defined; objectives and relevant variables are appropriate to the experimental context</b>                                                                                   |                      |
| <b>Evidence Acquisition</b><br><i>(Identify and gather information/data necessary to address the problem)</i> | Some, but not sufficient, evidence is acquired from source(s) with minimal or no consideration of its appropriateness to the problem or question. | Evidence is taken from source(s) to minimally address the problem or question at hand, with some consideration of its appropriateness                                                                    | <b>Evidence is taken from source(s) to sufficiently address the question or problem, with a thorough consideration of its appropriateness.</b>                                                              |                      |
| <b>Evidence Evaluation</b><br><i>(Evaluate evidence for credibility, reliability, and relevance)</i>          | Information taken from source(s) is minimally evaluated, but not enough to develop a well-rounded assertion of its credibility.                   | Information taken from source(s) is evaluated, providing some justified assertions of its credibility, but without sufficient awareness of the evaluation process itself (such as personal assumptions). | Information taken from source(s) is evaluated, providing some justified assertions of its credibility, and giving sufficient consideration of the evaluation process itself (such as personal assumptions). |                      |
| <b>Reasoning &amp; Conclusion</b><br><i>(Develop conclusions based on informed, well-</i>                     | Conclusion(s) is/are given, but are inconsistently tied to some of the                                                                            | Conclusion(s) is/are logically tied to information (because information is chosen                                                                                                                        | <b>Conclusion(s) is/are logically tied to a range of information, including opposing</b>                                                                                                                    |                      |

|                                 |                                                                                       |                                                                                                                              |                                                                                                             |  |
|---------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--|
| <i>reasoned<br/>evaluation)</i> | information<br>discussed; related<br>outcomes and<br>solutions are<br>oversimplified. | to fit the desired<br>conclusion); some<br>related outcomes<br>(consequences and<br>implications) are<br>identified clearly. | <b>viewpoints; related<br/>outcomes<br/>(consequences and<br/>implications) are<br/>identified clearly.</b> |  |
| TOTAL/COMMENTS                  |                                                                                       |                                                                                                                              |                                                                                                             |  |

Scale: 12-11 points = A; 10-9 points = B; 8-7 points = C; 6-5 points = D; less than 5 points = F



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5872                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-01-27 02:26 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Science

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

BIOL

---

### Number

1310C

---

### Title

Introduction to Human Anatomy and Physiology I Lecture & Laboratory

---

### Number of credits

4

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

BIOL

---

### Number

1310C

---

### Title

Introduction to Human Anatomy and Physiology I Lecture & Laboratory

## A. Content Area and Essential Skills

---

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

Science

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Personal & Social Responsibility

## Section B. Learning Outcomes

List all common course student learning outcomes for the course.

1. Define and explain anatomy and physiology.
2. Use anatomic directional, regional, and sectional terminology related to the human body.
3. Explain and describe the basic chemical principles of the human body including the structure and function of carbohydrates, lipids, proteins and nucleic acids.
4. Develop a basic familiarity with cells and cell organelles that include cell division, DNA replication, and protein synthesis.
5. Describe the structure and function of the major tissues in the human body.
6. Identify and describe the basic anatomical features of the integumentary, skeletal, muscle, nervous systems
7. Describe the basic physiological roles of the integumentary, skeletal, muscle, nervous
8. Apply and describe the physiological roles of the above-mentioned system in maintaining homeostasis in the human body.
9. Use and apply proper anatomic terms
10. Develop skills using the microscope correctly.
11. Identify basic tissue types.
12. Discuss and describe the basic anatomical features of the integumentary, skeletal, muscle, nervous.
13. Demonstrate and describe the physiological roles of the integumentary, skeletal, muscle, nervous.

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

N/A

## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

**Problem setting:** In this project-based learning module, students actively investigate health and environmental issues relevant to the Navajo Nation to build critical scientific skills. Students select a research topic such as a disease cause, environmental challenge, or the physiological effects of a traditional plant and formulate a focused, researchable question grounded in observation, Indigenous knowledge, and anatomy and physiology concepts. Instructors assess students' questions using a proposal rubric that measures clarity, relevance, and cultural grounding.

**Evidence acquisition:** Students gather qualitative and quantitative evidence from credible sources, including scholarly articles, tribal and government reports, census data, interviews, and laboratory experiments. Students record procedures, data, and reflections in a research log. Instructors assess learning by evaluating source quality, data accuracy, methodological rigor, and proper data presentation.

**Evidence Evaluation:** Students analyze and evaluate evidence by examining validity, reliability, and cultural

relevance. They participate in structured peer-review sessions to critique evidence and interpretations. Instructors assess students' analytical skills based on their ability to distinguish fact from opinion, apply appropriate analytical tools, and identify limitations in the data.

Reasoning/Conclusion: Students synthesize findings into a comprehensive laboratory report and oral presentation. They connect their data to anatomy and physiology principles to draw evidence-based conclusions and propose practical solutions.

Instructors assess reasoning, scientific accuracy, and communication using detailed rubrics. Quizzes measure students' understanding of core anatomy and physiology concepts.

---

**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

Communication and Representation of Quantitative Information:

Students collect numerical data from laboratory experiments and community interviews and transform their findings into clear graphs, tables, and visual representations. They integrate these visuals into laboratory reports and presentations to explain trends and relationships in the data. Students learn to present quantitative information in scientifically rigorous and culturally relevant ways that make findings accessible and meaningful to the Navajo Nation community.

Analysis of Quantitative Arguments:

Students critically examine the numerical evidence behind health and environmental claims. They evaluate data from scholarly sources and tribal databases by analyzing sample sizes, margins of error, and potential sources of bias. Through structured peer-review activities, students critique each other's quantitative arguments, distinguish between correlation and causation, and determine whether the data adequately supports the conclusions.

Application of Quantitative Models:

Students apply quantitative methods to real-world biological scenarios to deepen their understanding of human anatomy and physiology. They use basic statistical tests to interpret laboratory and field data, develop and test hypotheses using published datasets, and propose evidence-based solutions to identified problems. Instructors assess student performance through laboratory reports, problem-based assignments, and quizzes that measure students' ability to correctly apply quantitative models and interpret results in culturally informed scientific contexts.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

Ethical Reasoning:

Students examine ethical considerations related to biological research involving human subjects and community-based data. They evaluate issues such as informed consent, appropriate sourcing and use of biological samples, data ownership, and culturally respectful communication of physiological findings. Students articulate ethical principles in written reflections and case analyses, justify their positions using ethical frameworks, and propose responsible, actionable solutions to biological challenges. Instructors assess ethical reasoning using rubrics that measure clarity of ethical analysis, cultural awareness, justification of decisions, and feasibility of proposed actions.

Collaboration Skills, Teamwork, and Value Systems:

Students work in teams to investigate disease pathophysiology or analyze experimental data while grounding their collaboration in shared values of harmony, balance, and health. Teams assign roles, manage timelines,



and integrate diverse perspectives as they research and present biologically relevant community issues. Students demonstrate accountability through peer collaboration and collective problem-solving. Instructors assess teamwork through group project deliverables, peer- and self-evaluations, and observation of participation, focusing on communication, responsibility, respectful engagement, and the ability to align scientific work with shared community values.

## Section D. Assessment Plan

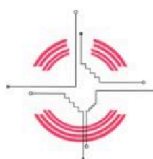
---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2026-01-27 02:26 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2026-01-27 02:26 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2026-01-27 02:10 PM (US/Mountain) |



**Intro. Human Anatomy & Physiology I**  
**4 Credits ( BIOL-1310C-1 ) Fall Semester, 2025**

Instructor: Dr. Palmer Masumbe Netongo

E-mail : [pnetongo@navajotech.edu](mailto:pnetongo@navajotech.edu)

**CRITICAL THINKING ASSESSMENT for FINALS Open Book**  
**Submission deadline: Dec 2, 2025**

**Each pair of students should answer question 1 or 2 plus questions 3 & 4.**

**Membrane Dynamics & Bioactive Transport**

1. Navajo tea is traditionally used to support digestion. If bioactive compounds in the tea are found to stimulate bile salt secretion from hepatocytes (liver cells), what specific cellular transport mechanisms (e.g., facilitated diffusion, exocytosis) would these compounds or the bile salts likely used to cross the hepatocyte's plasma membrane and enter the bile duct? Justify your reasoning based on the likely chemical nature of the compounds.
2. Research suggests some plant compounds can modulate fluidity of the cell membrane. Propose a hypothesis: How might a lipid-soluble compound from Navajo tea interact with the phospholipid bilayer of intestinal epithelial cells, and what potential effect could this have on the function of membrane-embedded proteins like digestive enzymes or nutrient transporters? Are there any observable health disparities in communities with different levels of navajo tea consumption?

**Organelle Function & Compound Synthesis/Secretion**

3. A research group hypothesizes that a compound in Navajo tea protects pancreatic beta cells from oxidative stress. Which two key organelles in the beta cell would be most critical to examine in this study? Justify your choice by explaining the primary function of each organelle and its specific role in both insulin production and responding to cellular stress.

**Quantitative Reasoning questions on Osmotic Balance & the Cell:**

4. A patient is given a large intravenous infusion of pure water (a hypotonic solution). Explain not just that their red blood cells would swell, but why, at the molecular level, water moves into the cell. Then, predict the physiological consequences if this happened to neurons in the brain.

**Assignment Purpose and Learning Outcomes:**

This assignment is designed to assess students' scientific knowledge hinging on critical thinking and quantitative reasoning, while engaging with real-world biological challenges. Students' findings will be presented Dec 2-5, 2025 as powerpoint presentations judged by peers and written reports graded by instructor.

**Good Luck**



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5942                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-10 01:47 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Arts & Humanities

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

BUSA

---

### Number

2420

---

### Title

Tribal Law

---

### Number of credits

3

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

BUSA

---

### Number

2420

---

### Title

Tribal Law

## A. Content Area and Essential Skills

---

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

Social & Behavioral Sciences

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

Upon completion of this course, the student should be able to:

1. Compare tribal governments to modern day tribal governments.
2. Identify tribal sovereignty and the U.S. government's obligation to protect tribal lands.
3. Identify jurisdictions in Indian Country.
4. Discuss what federal statutes mean and their implication in Indian Country.
5. Examine contemporary legal issues affecting tribes and how Supreme Court decisions affect tribal governments.
6. Discuss and utilize effective advocacy skills in moot court trial settings

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

N/A

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Genre and Medium Awareness, Application, and Versatility

Students develop communication skills by engaging in structured oral recap discussions at the beginning of each class, where they summarize key ideas from prior readings on historical and modern tribal government. Students actively participate by posing questions, responding to peers, and offering interpretations of how tribal governance has evolved. To demonstrate understanding in written form, students compose chapter summaries that synthesize main ideas and connect historical structures to contemporary tribal government. Learning is assessed through observation of participation in discussions, clarity and effectiveness of oral communication, and evaluation of written chapter summaries using a rubric focused on accuracy, organization, and comprehension.

Strategies for Understanding and Evaluating Messages

Students strengthen critical thinking skills by analyzing textbook readings and comparing historical and modern tribal government structures. During class discussions, students present original examples drawn from the readings and explain similarities and differences in governance approaches. Students maintain class notes and write short reflective narratives that integrate reading content with discussion insights. Assessment focuses on students' ability to analyze and evaluate information, demonstrated through written reflections, contributions to discussion, and the application of concepts to modern tribal government contexts.

Evaluation and Production of Arguments

Students develop reasoning and argumentation skills by examining contemporary legal issues affecting tribes. Each student selects a topic and applies Navajo thinking as a framework for analyzing conflict

resolution, then contrasts it with modern adversarial approaches. Students present their perspectives during class discussions and respond to peer viewpoints. Learning is assessed through participation, the quality of reasoning presented, and the ability to articulate and support arguments using historical and cultural frameworks.

---

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

**Problem Setting**

Students identify and define contemporary social and legal issues affecting the Navajo Nation, including health disparities, education, employment, cultural preservation, sovereignty, and jurisdiction. Working individually or in small groups, students formulate focused, intentional questions that connect personal experiences to broader legal and structural factors. During class discussions and in written chapter summaries, students apply Navajo thinking using the Four Direction method of analysis and directly compare this approach with adversarial frameworks. The instructor assesses students on the relevance of selected issues, clarity of questions, and the ability to articulate multiple perspectives.

**Evidence Acquisition**

Students locate, select, and use qualitative and quantitative evidence from credible sources, including scholarly articles, the Navajo Nation Code, textbooks, and video presentations. Students conduct content reviews and comparative analyses to gather supporting evidence. In discussions and written assignments, students explain how their evidence supports identified issues and apply the Four Direction framework (Nitsahakees, Nahat'a, Iina, Sihasin) to conflict resolution. Assessment measures participation, communication, quality of written work, and effective application of Navajo thinking.

**Evidence Evaluation**

Students analyze and evaluate sources for cultural relevance, credibility, and underlying assumptions. Students distinguish between factual claims and opinions and identify similarities and differences across perspectives. Through peer feedback and class discussion, students critique interpretations of course materials and refine their own understanding. The instructor assesses students' ability to evaluate evidence critically and apply Navajo thinking to issues affecting tribal governance.

**Reasoning and Conclusion**

Students synthesize evidence into coherent written analyses and oral presentations that connect Navajo thinking to contemporary tribal government and conflict resolution. Students draw conclusions, explain implications for the Navajo Nation and broader society, and justify their reasoning. Assessment focuses on clarity of reasoning, integration of evidence, and effective analysis of contemporary legal issues.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

**Ethical Reasoning**

Students apply ethical frameworks to analyze contemporary legal issues, including resource distribution, discrimination, and systemic injustice affecting tribal communities. Students compare and evaluate competing moral claims and examine how tribal governments address ethical tensions in real-world decision-making. Through written analyses, class discussions, and engagement with course materials, students explain inherent tribal powers and analyze how these powers shape federal and state regulation of Indian affairs, including tribes' authority to create and enforce their own laws. The instructor assesses students' ability to identify ethical principles, justify positions using evidence, and propose informed, actionable responses to contemporary legal challenges.



#### Collaboration Skills, Teamwork, and Value Systems

Students develop collaboration skills by working in small, diverse groups to research and analyze social issues relevant to their communities. Students assign roles, manage timelines, and integrate multiple perspectives to complete group projects and discussions. Through structured peer interactions and problem-solving activities, students practice active listening, respectful dialogue, and shared decision-making. Students reflect on how personal values, cultural backgrounds, and social identities influence group dynamics and ethical choices. Assessment evaluates both process and outcomes, focusing on students' ability to collaborate effectively, communicate clearly, demonstrate accountability, and uphold shared values such as equity, integrity, and teamwork.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2026-02-10 01:47 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2026-02-10 01:47 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2026-02-10 01:32 PM (US/Mountain) |

## **BUSA 2420: Tribal Law**

### **Final Project: Written Legal Analysis (application of the Four Direction Method of Analysis - Nitsahakees, Nahat'a, lina, Sihasin)**

#### **General Education Area: IV - Social and Behavioral Sciences**

#### **Essential Skills: Communication, Critical Thinking, and Personal & Social Responsibility**

### **Project Overview**

In this project, you will work individually to explore a social issue affecting the Navajo Nation. You will apply Navajo thinking, using the Four Direction method of analysis (Nitsahakees, Nahat'a, lina, Sihasin), and develop a solution(s) that address challenges within the community. The project will help strengthen your research, writing, and presentation skills while demonstrating critical thinking and social responsibility.

You will analyze your topic/issue using the Four Direction method of analysis (Nitsahakees/thinking; Nahat'a/planning; lina/Implementing; Sihasin/Desired Outcome) and explore both sides (i.e. positive, negative) to your chosen topic/issue in your written analysis.

### **Project Components**

#### **1. Individual Analysis Proposal**

Due: Week 5

Submit a 1-page summary that includes:

- Topic/Issue of Analysis
- Objective: list at least three objectives that you hope to accomplish from this exercise.
- Methodology: how will you choose your topic/issue (i.e. personal, newspaper, textbook material, law review article, Navajo Nation Code)

#### **2. Individual Written Analysis**

Due: Week 13

Your written analysis should be carefully thought out, organized, and demonstrate Navajo thinking. Include:

- A brief (4-5 sentences) summary of what your topic/issue is about.
- Main body of Four Direction framework (sample below)
  - Nitsahakees (thinking)
  - Nahat'a (planning)
    - Naalkah (to investigation; to understand)
    - Bikiiya (to search; to find)
    - Nidiilya (to select)
    - Beeheelya (to apply)
    - Nahoot'a (an agreement reached)
  - Iina (implementing)
  - Sihasin (reflection; achievement)

**Formatting:** 12-point Times New Roman, double-spaced, Word document. No page limit but ensure to cover all elements of the Four Direction.

#### FOUR DIRECTION Framework

(NITSAHAKEES, NAHAT'A, IINA, SIHASIN)

**Nitsahakees (thinking)** – it is in this section that information is well-thought out. The issue(s) is/are brought to the forefront.

**Nahat'a (planning)** – in this section ideas of how to address the issue(s). There may be many ideas of how to resolve the issue(s). This stage is comprised of five (5) steps (Naalkah, Bikiiya, Nidiilya, Beeheelya, Nahoot'a). These steps are applied to the 'Issue'.

#### *EXAMPLE:*

Issue No. 1 – 'name of your Issue'

State why the 'issue' is an issue here in 1-2 sentences.

Step 1: NAALKAH (to understand, to investigate) – What is the Anahoot'i?

Step 2: BIKIYA (to find, to search)- Discuss the underlying cause: What? Why?

Step 3: NIDIILYA (to select) - Identify Navajo guiding principles/concepts.

Step 4: BEEHEELYA (to apply) - Explain the application of principles/concepts.

Step 5: NAHOOTA (a final agreement) - Discuss the solution.

**lina (implementing)** – in this section, the solution(s) of how to address each issue(s) is explained here. The justification of action and remedy is explained.

**Sihasin (reflection on desired outcome)** – in this section, the process of arriving at the solution.

### **3. Individual Analysis Presentation**

Due: Week 14

Present your analysis to the class. Each student must listen to one another's analysis presentation and take notes and give feedback at the end of the presentation.

Presentations should be:

- Clear and well-organized
- Demonstrate thorough knowledge of your topic.
- Discuss how through this project assignment you better understand and are able to communicate the comparison between tribal governments to modern day tribal governments.



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5943                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-10 02:03 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Arts & Humanities

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

ECON

---

### Number

2110

---

### Title

Macroeconomic Principles

---

### Number of credits

3

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

ECON

---

### Number

1110

---

### Title

Survey of Economics

## New Mexico Common Course Information

---

### Prefix

ECON

---

### Number

2110

---

### Title

Macroeconomic Principles

## A. Content Area and Essential Skills

---

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

Social & Behavioral Sciences

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication



## Section B. Learning Outcomes

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

Students should be able to:

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

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

#### 1. Genre and Medium Awareness, Application, and Versatility

Students develop communication skills by producing economic messages in multiple formats, including analytical essays, structured discussion posts, applied problem explanations, and exam responses. Students explain economic concepts, models, and policy arguments clearly and adjust language, tone, and level of detail based on purpose and audience. They communicate economic ideas in both plain language and formal academic styles. The instructor evaluates students on clarity, accuracy, organization, and effective use of format across written and discussion-based assignments.

#### 2. Strategies for Understanding and Evaluating Messages

Students analyze and interpret economic information by reading textbooks, economic news, and data from credible government and research organizations. Students evaluate sources, interpret graphs and data, and identify key economic claims and supporting evidence. Assignments require students to apply appropriate economic terminology, assess the strength of evidence, and explain market outcomes or policy impacts logically. The instructor assesses students on their ability to interpret information accurately, evaluate evidence critically, and organize explanations clearly.

#### 3. Evaluation and Production of Arguments

Students construct, support, and present economic arguments by applying economic models and evidence to explain market behavior and policy alternatives. Students justify conclusions, identify assumptions, and synthesize data into coherent explanations. Through written assignments and exams, students produce well-reasoned arguments that demonstrate logical structure and effective use of evidence. The instructor assesses students on reasoning, evidence integration, and the quality of economic arguments produced.

---

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

**1. Problem Setting**

Students identify macroeconomic problems through weekly topic-based problem prompts focused on inflation, unemployment, and economic growth. In class, students complete short “problem-definition worksheets” where they define the economic issue, list relevant variables (such as price levels, labor force participation, or output), and identify whether the issue is short-run or long-run. Students also respond to exam-style scenario questions that ask them to frame economic problems within real-world policy or market contexts. Assessment measures students’ ability to correctly define problems, identify variables, and recognize cause-and-effect relationships.

**2. Evidence Acquisition**

Students gather economic evidence by working with provided datasets from sources such as the Bureau of Economic Analysis and the Bureau of Labor Statistics. During class, students complete guided data-interpretation exercises using GDP tables, inflation charts, and unemployment graphs. Homework assignments require students to calculate growth rates, inflation measures, and unemployment rates using real data. Exams assess students’ ability to locate relevant data within tables and graphs and accurately interpret numerical information.

**3. Evidence Evaluation**

Students evaluate economic evidence through in-class graph analysis activities where they compare data across different time periods and identify trends. Students answer multiple-choice and short calculation questions that require distinguishing correlation from causation and identifying assumptions embedded in economic models. Students also analyze policy scenarios that require evaluating whether the presented data adequately supports a stated economic claim. Assessment focuses on students’ ability to evaluate evidence, identify limitations, and interpret economic relationships.

**4. Reasoning and Conclusion**

Students apply reasoning by answering exam questions that require them to predict outcomes of monetary or fiscal policy changes using economic models. Students analyze scenarios, select appropriate models, and draw conclusions supported by data. Comprehensive multiple-choice exams assess students’ ability to integrate problem definition, evidence, and logical reasoning to reach sound, evidence-based conclusions.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

**1. Ethical Reasoning**

Students examine ethical dimensions of macroeconomic issues through assigned case studies on topics such as inflation policy, unemployment trade-offs, income inequality, and international trade. For each case, students answer guided questions that require them to identify stakeholders, explain potential benefits and harms, and evaluate the moral implications of policy decisions. Students complete written homework assignments that ask them to justify policy choices using both economic reasoning and ethical considerations. In online discussion boards, students post responses analyzing ethical trade-offs in public policy and respond to peers by comparing viewpoints. Assessment evaluates students’ ability to identify

ethical issues, apply economic concepts to moral reasoning, and justify conclusions clearly and logically.

## 2. Collaboration Skills, Teamwork, and Value Systems

Students build collaboration skills through structured online discussion boards that require them to respond to classmates' posts and engage in respectful dialogue about global economic issues such as trade policy and international economic coordination. Students analyze peer arguments, ask clarifying questions, and offer constructive feedback. Homework assignments require students to consider how economic policies affect diverse populations and reflect on how values such as fairness, responsibility, and cooperation shape economic outcomes. Assessment focuses on the quality of peer interaction, clarity of communication, respectful engagement, and the ability to recognize diverse perspectives and shared social responsibilities.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2026-02-10 02:03 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2026-02-10 02:03 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2026-02-10 01:48 PM (US/Mountain) |

## Case Study: Stimulus and Economic Recovery

### Scenario:

The nation of Newlandia has experienced a slowdown in economic growth over the past two quarters. Unemployment has risen from 4.2% to 6.5%, inflation is steady at 2%, and GDP growth has slowed from 3.1% to 1.2%. The government is considering a fiscal stimulus package to boost employment and economic activity.

### Provided Data:

| Quarter | GDP Growth (%) | Unemployment (%) | Inflation (%) | Consumer Spending (\$ billions) | Government Spending (\$ billions) |
|---------|----------------|------------------|---------------|---------------------------------|-----------------------------------|
| Q1      | 3.1            | 4.2              | 2.0           | 850                             | 400                               |
| Q2      | 1.8            | 5.3              | 2.1           | 830                             | 420                               |
| Q3      | 1.2            | 6.5              | 2.0           | 815                             | 450                               |

### Task:

1. Analyze the data: Identify key trends in GDP, unemployment, and consumer spending. What do these trends suggest about the current state of Newlandia's economy?
2. Evaluate policy options: Consider three fiscal policy options:
  - Increase government spending on infrastructure projects
  - Provide tax rebates to households
  - Combination of spending and tax cutsFor each option, discuss potential benefits, risks, and short-term vs. long-term impacts.
3. Ethical and societal implications: Consider how different population groups (low-income households, small businesses, and retirees) might be affected by each policy.
4. Recommendation: Choose the policy option you believe is most effective. Justify your recommendation using data and economic reasoning.

### Deliverable:

- Written report (2–3 pages): Include charts or graphs showing trends in GDP, unemployment, and consumer spending.



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5944                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-10 02:11 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Arts & Humanities

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

ECON

---

### Number

2120

---

### Title

Microeconomic Principles

---

### Number of credits

3

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

ECON

---

### Number

1110

---

### Title

Survey of Economics

## New Mexico Common Course Information

---

### Prefix

ECON

---

### Number

2120

---

### Title

Microeconomic Principles

## A. Content Area and Essential Skills

---

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

Social & Behavioral Sciences

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication



## Section B. Learning Outcomes

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

Students should be able to:

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

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Genre and Medium Awareness, Application, and Versatility

Students communicate economic reasoning by completing written market analyses, problem-set explanations, and structured discussion posts. Students explain economic concepts using graphs, equations, and written narratives, adjusting language and level of detail for different audiences and purposes. For example, students summarize consumer behavior in plain language for peer discussion and present more formal market analyses in written assignments. The instructor assesses students' ability to select appropriate formats, adapt explanations, and communicate clearly using rubrics that measure organization, clarity, and accuracy.

Strategies for Understanding and Evaluating Messages

Students interpret and evaluate economic messages by analyzing textbook readings, economic reports, graphs, and datasets. In class and online activities, students identify main claims, interpret visual data, and assess the reliability and relevance of sources. Students answer guided questions that require them to explain what economic evidence shows and how it supports specific arguments. Assessment focuses on students' ability to interpret data accurately, evaluate sources critically, and use appropriate economic terminology.

Evaluation and Production of Arguments

Students construct and defend economic arguments by explaining market dynamics, pricing decisions, and policy outcomes in written analyses and exam responses. Students support claims with economic models, data, and logical reasoning. Through discussion boards, students respond to peers by evaluating alternative

explanations and defending their positions. The instructor assesses students on clarity of reasoning, logical structure, effective use of evidence, and the accuracy of economic arguments using standardized rubrics.

---

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

**Problem Setting**

Students identify and define microeconomic problems through weekly problem sets and short case scenarios focused on consumer choice, firm behavior, price changes, and market failure. In these activities, students state the economic issue, identify relevant variables (such as price, cost, income, or elasticity), and specify the market context. Exam questions require students to recognize and frame economic problems presented in real-world scenarios. Assessment evaluates students' ability to clearly define problems and identify relevant economic factors.

**Evidence Acquisition**

Students gather and interpret evidence by working with supply-and-demand graphs, cost curves, market reports, and data tables provided in homework and exams. Students calculate elasticity, costs, revenues, and welfare measures using quantitative data. In written assignments, students summarize findings from assigned readings or brief market reports. Assessment measures students' ability to interpret graphs and data accurately and apply appropriate microeconomic concepts.

**Evidence Evaluation**

Students evaluate evidence through graph-comparison exercises and case studies that require identifying assumptions, limitations, and alternative explanations for market outcomes. Students compare competitive and non-competitive market models and assess how well each explains observed behavior. Exams include questions that require evaluating the strength of evidence and distinguishing between competing explanations. Assessment focuses on students' ability to assess credibility, relevance, and limitations of economic evidence.

**Reasoning and Conclusion**

Students apply microeconomic models to analyze policy interventions such as price controls, taxes, or subsidies. In problem sets and exams, students predict outcomes, evaluate efficiency and equity effects, and justify conclusions using data and economic reasoning. Assessment evaluates students' ability to integrate problem definition, evidence, and logical reasoning to produce sound, evidence-based conclusions.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

**1. Intercultural Reasoning and Intercultural Competence**

Students analyze how cultural values, income differences, and social norms influence consumer behavior and market participation through assigned case studies and discussion prompts. Students examine examples from domestic and international markets to compare purchasing decisions, labor practices, and responses to price changes across cultural contexts. In written case analyses, students explain how economic incentives interact with cultural factors and evaluate the implications for firms and policymakers. Online discussion boards require students to respond to peers by comparing perspectives and reflecting on how culture shapes economic outcomes. Assessment evaluates students' ability to analyze economic behavior across cultural contexts, apply microeconomic concepts accurately, and communicate respectful, informed interpretations.

**2. Collaboration Skills, Teamwork, and Value Systems**

Students develop collaboration skills by completing group-based case studies and participating in structured discussion boards focused on ethical issues such as fair pricing, labor standards, and environmental

externalities. Students assign roles, share research findings, and work collectively to propose solutions to economic problems. Through peer interaction, students practice respectful dialogue, consider diverse viewpoints, and reflect on how values such as equity, responsibility, and cooperation influence economic decisions. Assessment focuses on the quality of group contributions, effectiveness of communication, accountability, and the ability to integrate shared values into economic reasoning.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2026-02-10 02:11 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2026-02-10 02:11 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2026-02-10 02:04 PM (US/Mountain) |

## Case Study: Pricing and Market Decisions at FreshBrew Coffee

### Scenario:

FreshBrew Coffee is a local coffee shop chain that has dominated the downtown market for several years. Recently, three new cafés have opened nearby, increasing competition. FreshBrew's management is concerned about declining sales and wants to review pricing and production decisions to maintain profitability.

### Provided Data:

| Price per Coffee (\$) | Quantity Demanded (cups/day) | Quantity Supplied (cups/day) |
|-----------------------|------------------------------|------------------------------|
| 2.00                  | 200                          | 150                          |
| 2.50                  | 180                          | 160                          |
| 3.00                  | 150                          | 170                          |
| 3.50                  | 120                          | 180                          |
| 4.00                  | 100                          | 200                          |

### Cost Structure (per day):

- Fixed Costs: \$150
- Variable Costs: \$1 per cup

### Tasks for Students:

1. Analyze the market:
  - Identify the equilibrium price and quantity before competition intensified.
  - Determine how the new competition might shift the demand curve.
2. Evaluate pricing strategies:
  - Consider options such as lowering prices, introducing promotions, or differentiating products (e.g., specialty drinks).
  - Discuss potential impacts on revenue, costs, and profit.
3. Consider ethical and social implications:
  - How would price cuts or aggressive competition affect employees, suppliers, and customers?

- Are there sustainability or fairness concerns with each strategy?
- 4. Make a recommendation:
  - Recommend a pricing or production strategy using microeconomic reasoning and the data provided.
  - Support your recommendation with calculations, graphs, and an explanation of expected outcomes.

Deliverable:

- A 2–3 page report including:
  - Graphs of supply and demand curves
  - Calculations of revenue, cost, and profit at different price points
  - Analysis of ethical and social implications
  - Clear, evidence-based recommendation



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5954                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-12 05:54 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Arts & Humanities

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

ENGL

---

### Number

2320

---

### Title

Introduction to Fiction Writing

---

### Number of credits

3

---

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

No

---

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

No



## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

ENGL

---

### Number

2320

---

### Title

Introduction to Fiction Writing

## A. Content Area and Essential Skills

---

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

Creative & Fine Arts

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

1. Engage in a constructive conversation and community about fiction.
2. Read and critically engage with various works of fiction.
3. Compose creative works of fiction.
4. Provide respectful, honest, and critical feedback to peers about their work.
5. Learn a language that provides groundwork for workshop structure and peer critique.
6. Revise creative work based on peer feedback and critique.
7. Develop thoughtful workshop reflection on students' own writing and writing process.
8. Evaluate and engage with publication process.

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

N/A

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Genre and Medium Awareness, Application and Versatility:

Students actively develop critical skills through reading, analysis, discussion, and creative production.

Students read and analyze classic and contemporary short fiction by Navajo, Native American, and American writers. They identify themes, cultural perspectives, and narrative strategies and demonstrate understanding through written responses and guided class discussions. Instructors assess student learning using reading journals, short analytical assignments, and discussion participation.

Strategies for Understanding and Evaluating Messages:

Students apply strategies for understanding and evaluating messages by comparing and contrasting Navajo and Native American cultural themes with those in American literature. They communicate their analyses through informal writing, small-group discussions, and brief presentations. Instructors assess these activities using rubrics that measure comprehension, cultural awareness, and critical analysis.

Evaluation and Production of Arguments:

Students strengthen evaluation and production skills by composing original short fiction. They plan, draft, revise, and workshop their stories while applying the elements of fiction, including characterization, setting, plot, point of view, and theme. Students give and receive peer feedback during workshops and revise their work accordingly. Instructors assess learning through draft reviews, workshop participation, and evaluation of revised short stories using standardized writing rubrics.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

**Problem Setting:**

After reviewing classic and contemporary short fiction, students select and refine topics for their own original short stories. They analyze examples of short fiction and apply the basic elements of fiction writing, including characterization, setting, plot, point of view, comparison, and theme, to their work. During the first half of the semester, students practice fiction writing fundamentals through guided exercises and short assignments. During the second half, students draft, revise, and complete original short fiction. Instructors assess topic selection, planning activities, and early drafts using formative feedback and writing rubrics.

**Evidence Acquisition:**

Students read and analyze short fiction by published classic and contemporary authors using online texts, a required fiction writing guide, and library resources. They gather examples of narrative techniques and thematic development from these sources to support their own writing. Instructors assess students' use of sources through reading responses, research notes, and written analyses that demonstrate engagement with course materials.

**Evidence Evaluation:**

Students evaluate evidence through reading, writing, research, note taking, drafting, revision, and discussion. In discussion assignments, students post analytical responses and reply to classmates' posts. Students complete a midterm visual presentation analyzing a selected fiction writer and identifying recurring themes. Instructors assess discussions, assignments, and presentations using rubrics focused on analysis, clarity, and application of fiction concepts.

**Reasoning and Conclusion:**

Students demonstrate understanding by composing and revising original short fiction and reflecting on their writing process. They apply and identify core elements of fiction within their own work. Instructors assess learning through ongoing coursework and a final portfolio of original short fiction, which serves as the summative assessment for the course.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

**Intercultural Reasoning and Intercultural Competence:**

Students identify personal, social, cultural, and social justice issues presented as themes in classic and contemporary short fiction. They reflect on these issues during pre writing activities and integrate their own cultural perspectives into visual presentations and writing assignments. Students participate in peer review by giving and receiving feedback on their work. Instructors assess intercultural reasoning through reflective writing, presentations, peer review participation, and written assignments using rubrics that measure cultural awareness, perspective taking, and critical reflection.

**Ethical Reasoning:**

Students identify shared ethical responsibilities and moral norms portrayed in classic and contemporary fiction. Through reflection and discussion assignments, students explain why authors present specific ethical issues through characters and plot. Students then apply ethical reasoning to their own fiction by analyzing character choices, consequences, and environments during story development. They create narrative outcomes that address ethical challenges faced by their characters. Instructors assess ethical reasoning through discussion posts, reflective writing, draft reviews, and evaluation of original short fiction using rubrics focused on ethical analysis and application.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2026-02-12 05:54 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2026-02-12 05:54 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2026-02-12 05:41 PM (US/Mountain) |

## Sample Assessment

### ENGL 2320 – Introduction to Fiction Writing

**Assignment Title:** Fictional Setting

**Essential Skills:** Communication, Critical Thinking, and Personal and Social Responsibility

**Purpose:** This assignment helps the students develop communication, critical thinking, and personal and social responsibility skills by developing the setting for their short story. Students practice pre-writing strategies, such as brainstorming, outlining, and drafting.

#### Instructions:

1. Reading and Discussion Component (Communication and Critical Thinking)  
Choose two (2) of the following Suggested Stories and read them thoroughly for discussion. As you are reading, keep in mind the main ideas of setting development.  
  
“A Serious Talk” by Raymond Carver  
  
“The Bella Lingua” by John Cheever  
  
“Mrs. Dutta Writes a Letter” by Chitra Banerjee Divakaruni  
  
“Battle Royal” by Ralph Ellison  
  
“Car Crash While Hitchhiking” by Denis Johnson
2. Writing Component (Personal and Social Responsibility)  
Choose one (1) of the following writing prompts to begin your short story. In one page, double-spaced, write the beginning of your short story, with focus on the setting details.
  1. Consider the ideas of home, homesickness, foreignness, and alienation. Place a character in a scene where these ideas are evoked by place, time, and weather.
  2. Two characters are in a conflict over a setting. One wants to stay, the other wants to go. The more interesting the setting you choose, the more interesting the scene will be. Let the disagreement escalate. Resolve it. Who wins? How/ Why?
  3. The far past or the far future. Write a scene in which the members of a group disagree. How are conflicts differently resolved in this time period from how they would be in our familiar society?
  4. Write a scene from the perspective of an adult or old person looking back on her/his childhood or youth. Let the difference in the older person’s current setting color the recollection.

(Burroway, Janet. *Writing Fiction: A Guide to Narrative Craft*. The University of Chicago Press, 2019.)



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5955                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-12 06:14 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Arts & Humanities

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

HUMN

---

### Number

1180

---

### Title

The History of Native Americans in Media

---

### Number of credits

3

---

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

No

---

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

No



## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

HUMN

---

### Number

1180

---

### Title

The History of Native Americans in Media

## A. Content Area and Essential Skills

---

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

Humanities

---

### Selected Areas

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

## Section B. Learning Outcomes

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

1. Students will understand the Writing Process.
2. Students will gain knowledge about how to interpret creative works by various well known American Indian and non-native filmmakers and writers.
3. Students will be introduced to the nature of oral tradition and the challenges facing Native American readers from different Nations in preserving such materials.
4. Students will explore issues relevant to contemporary American Indians as portrayed in documentaries, dramas, comedies, horror, western, action adventure, and romance films.
5. Using anthropological and oral materials as background, we will consider how several major American Indian writers have combined old and new to develop innovative forms of expression.
6. Students will employ critical thinking and analysis skills including how to use M.O.O.D.L.E., the NTU online learning environment.
7. Students will attend class regularly, do assigned reading, take part in online/in class discussions, and participate in M.O.O.D.L.E. activities which include uploading Film Responses and a Final Electronic Portfolio of their best writing.

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

N/A

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

Here is the revised version written in the same style as your previous sections, focusing on student-centered activities and instructor assessment, with no em dashes:

#### Problem Setting:

Students formulate a clear, researchable question that addresses an open ended issue within a relevant context. They define and describe the components of the problem and demonstrate curiosity, critical thinking, and intellectual engagement aligned with Nitsáhákees, intellect and imagination. Students participate in class discussions, develop proposal drafts, and write reflective statements to clarify their research focus. Instructors assess learning through evaluation of research questions, proposal drafts, discussions, and reflections using criteria aligned with course concepts and real world applications.

#### Evidence Acquisition:

Students gather information from a variety of credible sources and demonstrate preparation and motivation aligned with Nahat'á. They identify, compare, and evaluate sources for relevance and credibility while examining how personal assumptions influence interpretation. Students document their research process through research logs, annotated bibliographies, and source evaluations. Instructors assess students' ability to

collect, organize, and justify evidence through review of research documentation and source analyses.

#### Evidence Evaluation:

Students analyze collected information by assessing the strength, credibility, and perspectives of their sources. They identify bias, synthesize key ideas, and refine their arguments through peer interaction and discussion, reflecting liná through collaboration and respect for diverse viewpoints. Instructors assess analytical summaries, discussion contributions, and peer review activities using rubrics that measure critical analysis and evidence evaluation.

#### Reasoning and Conclusion:

Students apply Sih Hasin by drawing reasoned conclusions based on research and analysis. They identify strong and weak arguments, recognize logical fallacies, and construct persuasive claims supported by credible evidence. Students communicate their conclusions through writing assignments, oral presentations, and final projects. Instructors assess these outcomes using rubrics that measure integration of evidence, reflective judgment, and clarity of communication grounded in both critical inquiry and Diné centered ways of thinking.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global** In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.

#### Intercultural Reasoning and Intercultural Competence:

Students explore social problems as they appear across cultures through sustained engagement in readings, discussions, and applied activities. They examine how cultural values, histories, and lived experiences shape perspectives on social issues. Through reflective writing, group discussions, case studies, and presentations, students connect course concepts to their own experiences and to broader community and global contexts. Students demonstrate intercultural competence by articulating multiple viewpoints and recognizing the influence of culture on interpretation and decision making. Instructors assess student learning through reflective journals, discussion contributions, written assignments, and presentations using rubrics that measure cultural awareness, perspective taking, and integration of course concepts.

#### Ethical Reasoning:

Students investigate ethical questions embedded in social problems and analyze how values, responsibilities, and moral frameworks influence individual and collective actions. Through readings, case analyses, structured discussions, and reflective writing, students explain ethical dilemmas and evaluate possible responses. Students apply ethical reasoning by justifying positions, considering consequences, and recognizing competing moral perspectives. Instructors assess ethical reasoning through written reflections, discussion posts, case study analyses, and applied assignments using rubrics that measure ethical awareness, reasoning, and clarity of justification

---

**Information & Digital Literacy. Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry.** In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy.

#### Authority and Value of Information:

Students critically examine how authority has historically shaped narratives about American Indians within American society. Through guided readings, film viewings, and discussions, students question assumed authority and analyze arguments by focusing on logic, evidence, and research methodology. They identify bias, standpoint, and value judgments within texts and media, including false dichotomies, unjust biases, and culturally situated perspectives. Students articulate their own interpretations through reflective writing and discussion, grounding their claims in reasoned analysis rather than appeals to authority. Instructors assess student learning through written reflections, film responses, and discussion contributions using rubrics that emphasize critical evaluation of authority, bias recognition, and argument quality.

#### Information Structures:

Students view films and produce subjective film responses that center personal reflection while adhering to a structured academic format. They organize ideas using MLA formatting and complete a Film Response Rubric as a self assessment tool. Students submit both the response and rubric, revise based on instructor feedback, and participate in online discussions to deepen analysis. Instructors assess students' organization, clarity, and relevance of information through review of film responses, rubrics, revisions, and discussion participation.

#### Digital Literacy:

Students develop digital literacy skills by engaging in course onboarding activities designed to support work in an online learning environment. They complete required orientation tasks, participate in virtual meetings, submit written assignments through the learning management system, and contribute to online discussions. Students evaluate and respond to digital content such as online articles, podcasts, institutional websites, Indigenous films, and audiobooks. Instructors assess digital literacy through successful completion of onboarding activities, quality of digital submissions, participation in online discussions, and effective use of multimedia sources.

## Section D. Assessment Plan

---

### [Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2026-02-12 06:14 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2026-02-12 06:14 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2026-02-12 05:55 PM (US/Mountain) |

## **HUMN 1180: The History of American Indians in Media**

### **Critical Media Analysis Paper**

#### **Assignment Description**

For this assignment, you will critically analyze how American Indians are represented in media. Using one film or media text from this course, you will examine authority, bias, ethical responsibility, and storytelling choices. This paper asks you to think carefully about *who is telling the story, how the story is told, and why that matters*. This is not a summary. Your goal is to analyze, question, and reflect.

#### **Instructions**

Choose one film or media text assigned in this course. Write a 4 to 6 page paper in MLA format that responds to the questions below. Use specific examples from the film and course readings to support your ideas.

#### **Section I: Authority and Perspective**

Answer the following questions:

1. Who created this film or media text? What do you know about the creator's background or standpoint, based on course materials?
2. Whose voices and perspectives are centered in this work? Whose voices are missing or minimized?
3. What kinds of authority does the media text rely on? For example, lived experience, historical documents, expert testimony, or emotional storytelling.
4. Does the media text encourage viewers to accept its claims without question? Explain why or why not.

#### **Section II: Representation and Bias**

Answer in complete paragraphs:

5. How are American Indians portrayed in this media text? Describe specific scenes, characters, or visual choices.

6. Does the media reinforce stereotypes, challenge them, or do both? Provide at least two examples.
7. What biases, assumptions, or value judgments can you identify in the storytelling? How do these shape the audience's understanding?

### **Section III: Ethical Reasoning**

Respond thoughtfully to each question:

8. What ethical responsibilities do filmmakers and media creators have when representing American Indian histories and cultures?
9. In your view, does this media text meet those responsibilities? Why or why not?
10. How might this media representation affect real American Indian communities or public understanding today?

### **Section IV: Reflection and Critical Insight**

Answer the following:

11. How did analyzing this media text change or complicate your understanding of American Indians in media?
12. What questions do you now ask when watching films or consuming media about Indigenous peoples?

### **Formatting and Submission**

- Length: 4 to 6 pages
- Format: MLA
- Submit through Blackboard by the due date

### **Evaluation Criteria**

Your paper will be evaluated based on:

- Depth of critical analysis

- Ability to evaluate authority and bias
- Ethical reasoning and use of evidence
- Clarity, organization, and engagement with course concepts





# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5956                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-12 06:37 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Arts & Humanities

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

HIST

---

### Number

1110

---

### Title

United States History I

---

### Number of credits

3

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

HIST

---

### Number

1110

---

### Title

United States History I

## A. Content Area and Essential Skills

---

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

Humanities

---

### Selected Areas

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

## Section 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 United States from the pre-colonial period to the immediate aftermath of the Civil War. Bloom Taxonomy's Cognitive Process: REMEMBER AND UNDERSTAND
2. Students will DISTINGUISH between primary and secondary sources, IDENTIFY and EVALUATE evidence and EMPATHIZE with people in their historical context. Bloom Taxonomy's Cognitive Process: ANALYZE, REMEMBER, EVALUATE, CREATE
3. Students will SUMMARIZE and APPRAISE different historical interpretations and evidence in order to CONSTRUCT past events.  
Bloom Taxonomy's Cognitive Process: UNDERSTAND, EVALUATE, APPLY
4. Students will IDENTIFY historical arguments in a variety of sources and EXPLAIN how they were constructed, EVALUATING credibility, perspective, and relevance. Bloom Taxonomy's Cognitive Process: REMEMBER, UNDERSTAND, EVALUATE
5. Students will CREATE well-supported historical arguments and narratives that demonstrate an awareness of audience. Bloom Taxonomy's Cognitive Process: CREATE, APPLY 8
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 9

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

N/A

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

#### Problem Setting:

Students investigate the historical problem of why the Pilgrims migrated to America by examining the religious, cultural, political, and economic conditions they experienced after leaving England for Holland. Students define the central question by identifying tensions related to religious freedom, economic survival, cultural identity, and political pressure. Through guided readings, videos, and class discussion, students frame a focused historical question that challenges simplified textbook narratives. Instructors assess student understanding through written problem statements, discussion participation, and preliminary research questions.

#### Evidence Acquisition:

Students gather relevant evidence from multiple assigned primary and secondary sources, including

historical documents, scholarly readings, and documentary videos. Students organize evidence using note taking strategies that identify source type, perspective, and relevance to the research question. Students also use approved digital archives to locate primary sources related to the Pilgrims' experiences. Instructors assess evidence acquisition through research notes, source logs, and annotated evidence summaries that demonstrate appropriate selection and organization of sources.

#### Evidence Evaluation:

Students analyze and compare evidence from written and visual sources to identify patterns, contradictions, and points of agreement. They evaluate credibility by considering authorship, historical context, purpose, and potential bias. Students determine which evidence most strongly supports their interpretation of the Pilgrims' motivations. Instructors assess evaluation skills through comparative analysis assignments and guided written responses that require justification of evidence selection.

#### Reasoning and Conclusion:

Students synthesize evaluated evidence to construct a historically supported explanation of the Pilgrims' decision to migrate to America. They develop a clear conclusion that addresses the complexity of religious, economic, and cultural factors rather than a single cause. Instructors assess reasoning through a short analytical essay or project evaluated with a rubric measuring use of evidence, logical reasoning, and clarity of historical interpretation.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global** In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.

#### Ethical Reasoning

Students develop ethical reasoning skills by examining moral choices, value systems, and consequences presented in historical events, media, or course case studies. Through guided readings, discussions, and reflective writing, students identify ethical dilemmas, evaluate competing values, and explain how individual and collective decisions affect communities. Students apply ethical reasoning by justifying positions using evidence and by considering the perspectives of different groups. Instructors assess ethical reasoning through reflective essays, discussion contributions, and written analyses using rubrics that measure ethical awareness, reasoning, and clarity of justification.

#### Personal and Social Responsibility: Collaboration Skills, Teamwork, and Value Systems

Students build collaboration and teamwork skills by working in small groups on structured activities such as document analysis, discussion facilitation, or project development. They practice respectful communication, shared responsibility, and recognition of diverse value systems while completing group tasks. Students contribute ideas, listen to peers, and negotiate differing viewpoints to reach collective conclusions. Instructors assess collaboration skills through observation of group interactions, peer evaluation, group products, and reflective statements that address teamwork, shared values, and individual contributions.

---

**Information & Digital Literacy. Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry.** In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy.

#### Authority and Value of Information

Students examine how authority is established in historical and contemporary sources by analyzing authorship, perspective, purpose, and context. Through guided readings, media analysis, and source comparison activities, students evaluate whose voices are represented, whose voices are excluded, and how bias and standpoint shape information. Students justify the credibility and value of sources based on evidence and reasoning rather than reputation alone. Instructors assess learning through source analysis worksheets, written reflections, and discussion contributions using rubrics that measure evaluation of authority, bias recognition, and use of evidence.

### Digital Literacy

Students develop digital literacy skills by locating, accessing, and engaging with information across digital platforms. They use online databases, digital archives, multimedia resources, and learning management systems to complete course assignments. Students evaluate digital content for reliability, accuracy, and relevance while practicing appropriate citation and responsible use of information. Instructors assess digital literacy through evaluation of digital source selections, online discussion participation, correct use of digital tools, and successful submission of assignments in required digital formats.

### Research as Inquiry

Students approach research as an iterative process by developing questions, refining them through evidence gathering, and revising interpretations as new information emerges. Through research planning activities, annotated bibliographies, and reflective writing, students investigate open-ended questions and explore multiple perspectives. Students demonstrate inquiry by asking meaningful questions, identifying gaps in information, and adjusting their research focus based on findings. Instructors assess research skills through research proposals, annotated bibliographies, reflective research statements, and final written or project-based work that demonstrates thoughtful inquiry and synthesis.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2026-02-12 06:37 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2026-02-12 06:37 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2026-02-12 06:22 PM (US/Mountain) |

## **HIST 1110: United States History I**

### **Assignment: The Real Reasons the Pilgrims Came to America**

#### **Instructions**

For this assignment, you will investigate why the Pilgrims came to America by examining historical evidence rather than relying on simplified stories you may have learned before. You will use course readings, videos, and primary sources to develop an evidence-based explanation of the Pilgrims' motivations.

Follow all directions carefully. Complete all parts of the assignment.

#### **Tools Needed:**

Internet access, course textbook, assigned videos, and access to the Plymouth Museum digital archive.

#### **Part 1: What You Think You Know**

Begin with an online discussion post.

Answer the following questions in complete sentences:

- What have you previously been taught about why the Pilgrims came to America?
- Where do you think this explanation came from, such as school, media, or popular culture?

Respond to at least two classmates.

#### **Part 2: Introduction “Not What You Think”**

Watch the assigned video *The Real Reason*.

Read the textbook section *The Pilgrims End Their Pilgrimage at Plymouth*.

After completing the video and reading, answer the following question in writing:

- Based on these sources, which motivation appears more important so far, religious freedom or economic survival? Explain your reasoning using examples.

#### **Part 3: Primary Source Investigation “Why We Left”**



Go to the Plymouth Museum digital archive at [MayflowerHistory.com](http://MayflowerHistory.com).  
Read the assigned excerpts from William Bradford's *Of Plymouth Plantation*.

Answer the following critical thinking question:

- According to William Bradford, what did the Pilgrims see as the greatest threat to their community while living in Holland? Was it religious persecution, cultural change, economic hardship, or a combination? Use specific language from the text to support your answer.

#### **Part 4: Putting the Evidence Together**

Review your notes from the video, textbook, and primary source.

Write a short response explaining:

- How religious, economic, and cultural concerns influenced the Pilgrims' decision to leave Holland and settle in America.
- Why the idea that the Pilgrims came only for religious freedom is incomplete.

#### **Part 5: Final Application**

Rewrite the following headline to reflect what you learned from the evidence:

**“Pilgrims Move to America for Religious Freedom”**

Your revised headline should be accurate, specific, and supported by historical evidence.

#### **Submission**

Submit all written responses through Blackboard. Use complete sentences and support your answers with evidence from the assigned sources.



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5957                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-13 08:38 AM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Business

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

ECON

---

### Number

1110

---

### Title

Survey of Economics

---

### Number of credits

3

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

ECON

---

### Number

1110

---

### Title

Survey of Economics

## A. Content Area and Essential Skills

---

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

Social & Behavioral Sciences

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

1. Gain and demonstrate a contextual understanding of economic terms and concepts.
2. Recognize and analyze common economic issues which relate to individual markets and the aggregate economy.
3. Learn basic economic principles that influence global trading and challenges relating to globalization.
4. Outline the implications of various economic policies on individuals and on economies.
5. Demonstrate ability to use diagrams and graphs to explain economic principles, policies and their applications.
6. Appreciate and understand how individual decisions and actions, as a member of society, affect economies locally, nationally and internationally.
7. Explain the roles of governments in influencing buyer and seller behavior in the market and how government failure occurs when intervention fails to improve or actually worsens economic outcomes.
8. Be able to apply course concepts to interpret, evaluate and think critically about economic events and policies, especially as regularly reported in the media and other public forums.

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

N/A

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

#### 1. Genre and Medium Awareness, Application, and Versatility

Students practice communicating economic ideas across multiple genres and media. They translate abstract, technical, and mathematical concepts into clear written and oral explanations using policy memos, research papers, discussion posts, presentations, and visual aids such as graphs or charts. Students adapt language and format to suit different audiences, including non-specialist readers. Instructors assess student learning through written assignments and presentations using rubrics that measure accuracy of economic terminology, clarity of explanation, effective use of visuals, and appropriateness of tone and genre.

#### 2. Strategies for Understanding and Evaluating Messages

Students interpret and evaluate economic messages by analyzing data, models, case studies, and podcasts. They identify key claims, examine supporting evidence, and assess how data and visuals are used to persuade or inform audiences. Students compare competing economic arguments and discuss the strengths and limitations of each interpretation. Instructors assess these skills through discussion contributions, case study analyses, podcast reviews, and data interpretation exercises, focusing on students' ability to interpret evidence, recognize assumptions, and evaluate the effectiveness of economic messaging.

### 3. Evaluation and Production of Arguments

Students develop and present evidence-based economic arguments through research papers, problem-based learning activities, and structured debates. They use data to support claims, explain reasoning clearly, and respond to alternative viewpoints using objective analysis. Students collaborate in group scenarios such as market analysis or taxation problems, articulating solutions and justifying decisions. Instructors assess argument quality through research papers, group work, and presentations using rubrics that emphasize logical structure, use of evidence, clarity of communication, and effective simplification of complex economic concepts.

---

## **Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

### 1. Problem Setting

Students analyze real-world economic situations by identifying a central economic problem and the competing choices involved. They define relevant economic questions related to scarcity, incentives, opportunity cost, and tradeoffs. Through case studies and scenario-based prompts, students distinguish between causation and correlation and identify assumptions underlying economic claims. Instructors assess student learning through written problem statements, case study introductions, and discussion contributions that demonstrate accurate identification of economic issues and framing of analytical questions.

### 2. Evidence Acquisition

Students gather economic evidence from data sets, graphs, charts, policy examples, and case study materials provided in the course. They identify relevant variables and select appropriate economic models, such as supply and demand or marginal analysis, to examine the problem. Students organize data and evidence using tables, graphs, and written summaries. Instructors assess evidence acquisition through data interpretation exercises, research notes, and case study preparation materials that demonstrate accurate selection and organization of economic evidence.

### 3. Evidence Evaluation

Students evaluate economic evidence by interpreting data, testing claims, and assessing logical consistency. They analyze whether observed relationships suggest causation or correlation and examine tradeoffs associated with different economic decisions. Through think-aloud problem solving, discussions, and case reviews, students explain their reasoning and respond to alternative interpretations. Instructors assess evidence evaluation through problem explanations, discussion participation, and written analyses using rubrics focused on analytical reasoning, accuracy, and application of economic principles.

### 4. Reasoning and Conclusion

Students synthesize evidence to construct well-reasoned economic conclusions. They apply core concepts to predict outcomes, compare alternatives, and justify decisions using data and economic logic. Students communicate conclusions through solution-focused research papers and scenario-based responses. Instructors assess reasoning and conclusions through written assignments and presentations that measure clarity of argument, use of evidence, and understanding of economic tradeoffs.

---

## **Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

### 1. Ethical Reasoning

Students develop ethical reasoning by examining how economic decisions affect individuals, organizations, and society. Through real-world case studies, students analyze ethical dilemmas related to market behavior, corporate responsibility, wages, pricing, and resource allocation. They evaluate the social and managerial consequences of economic actions and consider multiple perspectives when forming judgments. Students

apply economic literacy to personal finance decisions by reflecting on budgeting, consumption, and financial tradeoffs. Instructors assess ethical reasoning through case study analyses, reflective writing assignments, and scenario-based responses using rubrics that measure ethical awareness, reasoning, and use of economic principles.

## 2. Collaboration Skills, Teamwork, and Value Systems

Students strengthen collaboration and teamwork skills by working in small groups on simulations, projects, and structured debates. Activities include developing a personal or group budget, analyzing consumer reports, and debating the social responsibility of firms. Students practice respectful communication, shared decision making, and open minded inquiry as they engage with differing economic values and perspectives. They explain their reasoning, respond to peer feedback, and negotiate solutions to economic problems. Instructors assess collaboration skills through group project outcomes, peer evaluations, participation in discussions, and reflective statements that address teamwork, values, and individual contributions.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2026-02-13 08:38 AM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2026-02-13 08:38 AM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2026-02-13 08:30 AM (US/Mountain) |



# MEMORANDUM

**To : ECON1110**

**From : Douglas Capitan, Asst. Professor of Public Administration**

**Date : 01/20/2026**

**Subject : ECON Project Paper Assignment**

## **Technical Specifications**

Your assignment is to write a paper of 1500 words (plus or minus 10% and does not include works cited).. All of the usual parameters; such as; double spaced in a 12-point font, memo style document or APA style. Ensure you have a subject and your name on the paper. Use one inch margins all around and please use either Times Roman or Arial as your font.

## **Due Date**

**Draft 1 Due March 30, 2026**

**Final Draft Due April 20, 2026**

## **Submission:**

Papers will be uploaded into blackboard as an attachment using a word file. If you have trouble with Blackboard, email instead.

## **Paper Topics:**

The paper topic will be of your choice. **You will need to identify a societal problem (stray dogs, drunk driving, law enforcement limitations in indigenous communities...etc.) and offer solutions OR to identify a solution you feel has already been effective and explain how this is so**, as related to the subject matter of this course.

1. Identify the issue or problem
2. Identify the first hand cause
3. Identify a solution or more to aid in addressing the issue/s.

You will provide your understanding of how the frameworks of the subject matter for this course guide and shape our lives. You may utilize the textbook, discussions in class, and your understanding from your personal experiences, and interviews with professionals. The information can also be pulled from online sources that are used by the federal, state, or local

Your task is to demonstrate how well organized you can articulate and work through a thought process and use critical thinking skills in a very concise and formative reflection paper.

**Purpose of Assignment:**

This assignment is to evaluate your comprehension of the course content, evaluate your skills in communicating and translating economic concepts, engage in debate, interpret data, critical thinking, identify, analyze, and evaluate economic arguments and concepts, analyze the impact on society, and offer an opportunity to expand your scope of understanding as to how decisions we make influence many parts of our lives.

**Grading:**

- 20% - Introduction and setup
- 40% - Understanding, explanation, analysis, and examples tied to course subject matter
- 20% - Organization and structure
- 20% - Conclusion and summary
- 20% - Grammar

**Citations and References Information**

The information below is offered to assist you in drafting and finishing your paper. It is optional if you do not use other sources of information aside from the interview, book, and discussions. Reference as best possible and always refer to online resources when needed. Small grammatical errors won't be as scrutinized as much as the overall comprehension of the topic is.

**In-text Citations:**

You should include at least some of the course material to include readings to make it evident that you read and understand the lesson material. Other materials are optional. You may do some research (probably online) and synthesize some other ideas into your reflection. Ensure you cite these sources using the mechanism of putting the author and date in parenthesis at the end of a section containing their ideas, e.g. (Corson 2007).

**Works Cited:**

Please include a "Works Cited" section at the end of the paper that list the author(s) last name first, date of publication, title, and publisher information. You may use the course textbook as the sole source or include other books to add to your paper. Although I don't require it, the APA style of writing will be something all colleges adhere to and is made better through practice. APA style guidelines can be found using the following link [Owl Purdue - APA Style Writing Guidelines](#)

**Here are some examples for the Works Cited:****Multi-authored journal article:**

Palka, Eugene J., Francis A. Galgano, and Mark W. Corson (2006) "Operation Iraqi Freedom: A Military Geographical Perspective," *The Geographical Review* Vol. 95, No. 3, pp. 373-399.

**Single authored journal article:**

Corson, Mark W. (2000), "Hazardscapes in Reunified Germany." Environmental Hazards. Vol. 1, No. 2.

**Book Chapter:**

Corson, Mark W. and Eugene J. Palka (2004), "Geotechnology, the US Military, and War," in Geography and Technology edited by Stanley D. Brunn, Susan L. Cutter, and JW Harrington Jr. Dordrecht: Kluwer Academic Publishers.

**Book:**

Corson, Mark W. (2007), I Wish I had Written a Book (New York: No Such Publisher)  
I am not overly worried about the exact format as long as I can look at the author and date and easily reference it to the full citation in the works cited section. Citations do not count against your 250 words.

Please insert page numbers at the bottom of the pages. You may also include images, maps, charts, etc. Please ensure you include a caption and reference the graphic in the text. Captions do not count against your 250 words. Cite the source of the graphic in the caption, e.g. "author's photo".



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5961                              |
| Institution        | NTU                               |
| Applicant(s)       | pboahene@navajotech.edu           |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-13 01:18 PM (US/Mountain) |

# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

Colleen Bowman

---

### Chief Academic Officer Email

cbowman@navajotech.edu

---

### Registrar Name

Jason Wright

---

### Registrar Email

jasonwright@navajotech.edu

---

### Course's Academic Department

Engineering, Mathematics, & Technology

---

### Is this a Application a Re-Submission

no

## Institutional Course Information

---

### Prefix

MATH

---

### Number

1110

---

### Title

Math for Teachers I

---

### Number of credits

3

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

MATH

---

### Number

1110

---

### Title

Math for Teachers I

## A. Content Area and Essential Skills

---

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

Mathematics

---

### Selected Areas

Critical Thinking, Quantitative Reasoning, Communication

## Section B. Learning Outcomes

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

1. Unpack arithmetic.
  - a. Component 1: Explain procedures for doing addition, subtraction, and multiplication with whole numbers, integers, and fractions.
  - b. Component 2: Do addition, subtraction, and multiplication of multi-digit numbers in several different ways.
  - c. Component 3: Analyze student work, assess validity of arguments, and identify mathematical misconceptions in mistakes.
  - d. Component 4: Use the decomposition of whole numbers to find factors, multiples, and prime numbers.
  - e. Component 5: Use the relationships between operations, to solve simple algebraic equations.
2. Apply mathematical concepts.
  - a. Component 1: Recognize the difference between multiplicative and additive situations.
  - b. Component 2: Solve problems involving fractions.
3. Represent mathematical concepts.
  - a. Component 1: Use tactile representations, including base blocks and integer chips to represent numbers and operations.
  - b. Component 2: Use visual representations, including discrete pictures, number lines, and rectangles, to represent operations.
  - c. Component 3: Use tactile and visual representations to explain how estimation and rounding work.
  - d. Component 4: Use concrete applications to represent operations.
4. Communicate mathematical concepts.
  - a. Component 1: Describe the equivalence between different representations of numbers and operations.
  - b. Component 2: Create justifications for properties and procedures in arithmetic.
  - c. Component 3: Use correct terminology and notation.

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

N/A

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Genre and Medium Awareness, Application, and Versatility

Students represent rational numbers and operations using multiple forms, including visual models, symbolic notation, written explanations, oral presentations, and hands on manipulatives such as Unifix cubes, counting bears, pattern blocks, and fraction strips. Students explain their reasoning during Math Talks and interpret classmates' representations through guided discussion. Students also design brief instructional activities that demonstrate how to use manipulatives to teach mathematical concepts. Instructors assess learning through problem sets that require multiple representations, written explanations, oral presentations, and lesson

design assignments. Rubrics measure mathematical accuracy, clarity of explanation, and consistency across representations.

### Strategies for Understanding and Evaluating Messages

Students analyze mathematical problems by comparing solution strategies, evaluating peer explanations, and identifying errors in reasoning. They use manipulatives and visual tools to test, verify, and revise solutions. Through play based and collaborative activities, students practice mathematical language, engage in critical thinking, and communicate ideas clearly. Instructors assess understanding through written analyses of solution methods, error analysis tasks, participation in structured Math Talks, and evaluation of case based student work that incorporates manipulatives and visual reasoning.

### Evaluation and Production of Arguments

Students construct written and oral mathematical arguments by justifying procedures, comparing multiple strategies, and supporting conclusions with visual, symbolic, and concrete evidence. They use storytelling, drawings, and manipulatives to explain their reasoning and present their thinking in collaborative settings. Instructors assess argument quality through written justifications, rubric based evaluation of reasoning during discussions, lesson plan assignments that include explanation components, and structured reflections that demonstrate logical coherence and mathematical accuracy.

---

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

### Problem Solving

Students identify and clearly define mathematical problems involving rational numbers, fractions, decimals, and geometric connections. They analyze tasks to determine what information is needed and select appropriate strategies and representations to investigate solutions. Students apply George Pólya's problem-solving process alongside Navajo Technical University's philosophy of Nitsáhákees (Thinking), Nahat'á (Planning), liná (Living), and Sihasin (Assuring) to guide their reasoning. Assessment includes observation of problem identification during structured activities, review of lesson plans where problems are clearly articulated, and evaluation of written work outlining problem parameters and chosen strategies.

### Evidence Acquisition

Students gather and record evidence using manipulatives such as Unifix cubes, counting bears, and pattern blocks, as well as visual models, number lines, and symbolic notation. They generate examples, document results, and identify patterns or relationships that support problem solving. Through play-based learning, students explore how concrete experiences support conceptual understanding and model effective strategies for teaching mathematics. Assessment includes student work samples, documentation of manipulative use, and reflective logs describing how evidence was collected and used.

### Evidence Evaluation

Students evaluate the accuracy and relevance of their solutions by comparing multiple strategies, analyzing peer reasoning, and identifying errors or misconceptions during Math Talks and collaborative problem-solving sessions. They apply strategies such as looking for patterns, working backward, and creating tables or graphs to strengthen reasoning. Assessment includes rubric-based evaluation of reasoning, error analysis assignments, and observation of participation in structured discussions.

### Reasoning and Conclusion

Students draw logical conclusions supported by evidence and justify their solutions through written and oral explanations. They explain connections among representations using manipulatives, visuals, and symbolic calculations. Math Talks emphasize reasoning, reflection, and process rather than speed or final answers. Assessment includes written justifications, oral explanations, lesson plan assignments with instructional rationales, and reflective summaries documenting reasoning and conclusions.

---



**Quantitative Reasoning. Communication/Representation of Quantitative Information; Analysis of Quantitative Arguments; and Application of Quantitative Models. In this box, provide a narrative that explains how the proposed course addresses all of the components of quantitative reasoning.**

**Communication and Representation of Quantitative Information**

Students represent numbers, operations, and mathematical relationships using multiple formats, including manipulatives (Unifix cubes, counting bears, pattern blocks), visual models (number lines, area models, fraction strips), symbolic notation, charts, and oral explanations. Students practice translating between concrete, visual, and abstract representations to communicate mathematical thinking clearly and accurately. A play-based approach is used to strengthen spatial reasoning and number sense while supporting the development of advanced numeracy skills. Assessment includes problem sets, student work samples, oral presentations, and lesson plan assignments evaluated with rubrics that measure accuracy, clarity, and consistency across representations.

**Analysis of Quantitative Arguments**

Students analyze and evaluate mathematical arguments by interpreting solution strategies, examining peer explanations, and determining whether conclusions are supported by evidence. They identify errors, compare multiple solution paths, and explain why certain strategies are effective. Through Math Talks and structured discussions, students develop critical thinking skills by recognizing patterns, comparing quantities, and applying logical reasoning to numerical concepts and data. Assessment includes written error analysis assignments, participation in discussions, and evaluation of peer work using analytic rubrics focused on reasoning and justification.

**Application of Quantitative Models**

Students apply quantitative models such as number lines, fraction strips, base-ten blocks, and pattern-based models to represent and solve mathematical problems. They use these models to demonstrate relationships among rational numbers, perform operations with fractions and decimals, and connect numerical reasoning to geometric concepts. Students explain how models support their problem-solving decisions and reflect on the effectiveness of different approaches. Assessment includes observation of model use during activities, collection of student work demonstrating applied solutions, reflective exercises, and rubric-based evaluation of both procedural accuracy and conceptual understanding.

## **Section D. Assessment Plan**

---

**[Link to Institution's General Education Assessment Plan](https://www.navajotech.edu/academics/general-education/)**

<https://www.navajotech.edu/academics/general-education/>

# Application History

| Type          | username                | Text                                                                 | Timestamp                         |
|---------------|-------------------------|----------------------------------------------------------------------|-----------------------------------|
| Submittal     | pboahene@navajotech.edu | Submitted by pboahene@navajotech.edu                                 | 2026-02-13 01:18 PM (US/Mountain) |
| Authorization | pboahene@navajotech.edu | pboahene@navajotech.edu has authorized the application for submittal | 2026-02-13 01:18 PM (US/Mountain) |
| Created       | pboahene@navajotech.edu | Application started by pboahene@navajotech.edu                       | 2026-02-13 01:08 PM (US/Mountain) |

## **Directions: Number Line Model Activity (Addition & Subtraction)**

### **Objective**

Students will use a number line to model and solve addition or subtraction problems and explain their reasoning.

### **Materials**

- Paper or whiteboards
- Markers or pencils
- Printed number lines (0–20) or blank number lines
- Optional: Floor number line (tape on the floor)

### **Procedure**

#### **1. Introduce the Problem**

Present a problem (e.g.,  $8 + 5$  or  $13 - 4$ ). Read it aloud and display it clearly.

#### **2. Model the Strategy**

Demonstrate how to:

- Locate the starting number on the number line.
- Make forward “jumps” for addition or backward “jumps” for subtraction.
- Count the jumps accurately.

#### **3. Student Practice**

Students draw or use a provided number line.

- Mark the starting number.
- Show each jump clearly.
- Write the final answer.

#### **4. Math Talk (Discussion)**

Invite students to explain:

- Where they started
- How many jumps they made
- Why they moved forward or backward
- Whether another strategy could work

#### **5. Comparison of Strategies (Optional Extension)**

Have students solve the same problem using a different method (e.g., manipulatives or counting on) and compare approaches.

**Closure:** Ask students to summarize how the number line helped solve the problem.

### **Rubric**

### **Application of Number Line Model (Student Assessment)**

| <b>Criteria</b>                                        | <b>Meets Expectations</b>                                                                   | <b>Approaches Expectations</b>                                         | <b>Does Not Meet Expectations</b>                                         |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <b>Use of the Model</b>                                | Represents the problem correctly on the number line with accurate starting point and jumps. | Represents the problem with minor errors in placement or jumps.        | Does not correctly represent the problem on the number line.              |
| <b>Mathematical Accuracy</b>                           | Final answer is correct and aligns with the model shown.                                    | Final answer contains minor errors or partially aligns with the model. | Final answer is incorrect and does not align with the model.              |
| <b>Explanation of Reasoning</b>                        | Explains the steps taken and connects jumps to addition or subtraction.                     | Provides a partial or unclear explanation of steps.                    | Does not explain steps or explanation does not align with the work shown. |
| <b>Comparison of Strategies (if applicable)</b>        | Identifies and explains at least one additional strategy.                                   | Identifies another strategy without explanation.                       | Does not identify another strategy.                                       |
| <b>Collaboration &amp; Participation (group tasks)</b> | Participates in discussion, listens to peers, and contributes to the task.                  | Participation is inconsistent during discussion or task.               | Does not participate in discussion or task.                               |

### **Math 1110 – Number Line Model Assessment Grading Sheet**

**Student Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Problem:** \_\_\_\_\_

#### **Instructions:**

Complete the number line problem and show all work. Use the space below to represent the problem on a number line and explain your steps. Group discussion may be used if assigned. After completion, your work will be graded using the rubric and point distribution below.

#### **Representation on the Number Line**

Draw your number line here and show your jumps:

---

---

---

**Points (25):** ☐ Meets ☐ Approaches ☐ Does Not Meet

**Mathematical Accuracy**

Final Answer: \_\_\_\_\_

**Points (25):** ☐ Meets ☐ Approaches ☐ Does Not Meet

**Explanation of Reasoning**

Explain each step of your solution and connect it to the jumps or operations on the number line:

---

---

---

**Points (20):** ☐ Meets ☐ Approaches ☐ Does Not Meet

**Comparison of Strategies (if applicable)**

Describe at least one alternative strategy to solve this problem:

---

---

**Points (15):** ☐ Meets ☐ Approaches ☐ Does Not Meet

**Collaboration & Participation (for group tasks)**

Describe your contributions to the group discussion or task:

---

---

**Points (15):** ☐ Meets ☐ Approaches ☐ Does Not Meet

**Total Points:** \_\_\_\_\_ / 100

**Instructor Notes / Comments:**

---

---

---



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 1312                              |
| Institution        | NMT                               |
| Applicant(s)       | heather.juarez@nmt.edu            |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-16 01:53 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

STEVE SIMPSON

### Chief Academic Officer Email

STEVE.SIMPSON@NMT.EDU

### Registrar Name

HEATHER JUAREZ

### Registrar Email

heather.juarez@nmt.edu

### Course's Academic Department

Communication, Liberal Arts, Social Sciences

### Is this a Application a Re-Submission

yes

### Describe the Clarifications to the Original Application

Adjustment to the component skills, addressing clarity, while adding non specific examples to demonstrate how they are meeting the skills.

## Institutional Course Information

### Prefix

ARTS

### Number

1710

### Title

Introduction to Printmaking

### Number of credits

3

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

No

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

No



## Co-requisite Course

---

### Prefix

NA

---

### Number

NA

---

### Title

NA

## New Mexico Common Course Information

---

### Prefix

ARTS

---

### Number

1710

---

### Title

Introduction to Printmaking

## A. Content Area and Essential Skills

---

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

Creative & Fine Arts

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

Student Learning Outcomes

Properly operate a printing press and safely handle materials and equipment. 2. Demonstrate an adequate ability to utilize basic historical printmaking techniques that are widely relevant to contemporary, artistic expressions. 3. Utilize formal elements of art and design (line, shape, value, texture, space, and color), to create prints that are formally sophisticated. 4. Create imagery that contains conceptual depth, which can be interpreted by viewers with regard to social, cultural, political, geographical, and/or psychological experiences and relevance.

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

NA

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Essential skill: Communication

Component Skills:

Genre and Medium Awareness, Application, and Versatility

This course requires a final research presentation that involves both oral and digital communication. The historical print project is an example of visual communication. For this assignment, the students use the Metropolitan Museum of Arts website archives where they select a printmaker, examine examples, and practice imitating and reformulating historical examples of the genre. Each have different contexts and audiences - for instance the research presentation is scholarly, while the print has a general, less formal audience. The final prints that students create are displayed at the school's Fine Arts show at the end of every semester.

Strategies for Understanding and Evaluating Messages

The research presentation teaches and evaluates students' ability to locate supportive documentation for their arguments, and to apply a sociohistorical lens to understanding their readings. Historical print assignment requires students to review existing examples that have political and cultural lenses, and then to "remix" these master printer's etchings to have new political, personal or cultural meanings. Thus they learn to understand the messages in their original historical context, but to adapt the message for more modern audiences.

Evaluation and Production of Arguments

As students research for their historical presentation, they are taught how to generate MLA citations and how to identify appropriate, useful sources using library resources. This is taught during a dedicated citation workshop, which covers citing images, citing sources, in-text citations, using library resources (and why these resources are better than Google), and the use of the CRAAP and SIFT methods (Currency, Relevance, Authority, Accuracy and Purpose; Stop, Investigate, Find and Trace). We also cover Boolean phrases, and how to find a physical book in the library. This is then assessed on the final rubric of this presentation.

---

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Essential Skill: Critical Thinking

Component Skills:

**Problem Setting**

Students choose their own topic for their research presentation, delineating their own research questions. These are guided by the project description and rubric, as well as my feedback on their presentation outlines. In addition, students choose their own historical print to revise in the Old Master's assignment. They are required to research Old Master prints using the Met Museum's archives, and to choose what type of linework and value structure they want to learn - a situation of visual problem solving. For example, one student took a historical print with angels holding banners. The students had to find a way to use the existing design in the historical print to construct a message on LGBTQIA+ identity and pride for a modern audience. Another student flipped the image of Jerome and his lion to comment on gendered concepts of bravery.

**Evidence Acquisition**

For the research presentation, students must identify and gather both textual and visual evidence for their claims. These must be relevant to their final research presentation, and must be discussed directly as the student presents. Students must gather at least 3-5 academic sources and 3-5 examples of images that they use for the project.

**Evidence Evaluation**

Students are taken to the library as part of the class, where library staff provide methods for determining the effectiveness and applicability of sources. For research presentations, students are taught to use the CRAAP and SIFT methods (Currency, Relevance, Authority, Accuracy and Purpose; Stop, Investigate, Find and Trace). They also learn how to fact check online sources for accuracy and purpose. This is evaluated on the rubric, as well as through my review of their presentation outlines.

**Reasoning/Conclusion**

Research for historical presentations requires students to argue their points related to the topics' cultural, social and historical relevance, and to make their own conclusions about the importance of the topic chosen (EX - Albrecht Dürer was not just a printmaker, he was a polymath, an observant natural philosopher, a man of science and an innovative businessman. He has had indelible impact on the all of these fields.)

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global** In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.

Essential Skill: Personal and Social Responsibility (only 2 of 5 needed)

Component skills

Intercultural reasoning and intercultural competence

Through all assignments, students develop a concept (evaluated in the project rubric), which often require that they advocate for a personal, cultural or social justice issue when they present for critique. For example, in the Old Master's assignment, student work had depicted topics ranging from gender equity to personal narratives from childhood.

Collaboration skills, teamwork and value systems

Critique and teamwork are a separate, independent grade. Critique looks different over time, but I've attached an example of a guided critique. Over time, the guidance falls away, allowing for more organic conversations within groups or across the entire class, depending on course size. In critique, students must learn to consider their own strengths and weaknesses, identify the strengths and weaknesses of their work, consider the opinions of others, and suggest improvements to other's designs. Critique, historically and in my classes, serves to develop the aesthetic and conceptual value system of a student.

## Section D. Assessment Plan

[Link to Institution's General Education Assessment Plan](https://www.nmt.edu/academicaffairs/assessment/gened.php)

<https://www.nmt.edu/academicaffairs/assessment/gened.php>

# Application History

| Type          | username               | Text                                                                | Timestamp                          |
|---------------|------------------------|---------------------------------------------------------------------|------------------------------------|
| Created       | heather.juarez@nmt.edu | Application started by heather.juarez@nmt.edu                       | 2023-03-10 01:50 PM (US /Mountain) |
| Submittal     | heather.juarez@nmt.edu | Submitted by heather.juarez@nmt.edu                                 | 2026-02-16 01:53 PM (US /Mountain) |
| Authorization | heather.juarez@nmt.edu | heather.juarez@nmt.edu has authorized the application for submittal | 2026-02-16 01:53 PM (US /Mountain) |

**Rebecca Spruill**  
Assistant Professor  
[rebecca.spruill@nmt.edu](mailto:rebecca.spruill@nmt.edu)

**Office Hours:**  
Fitch Hall, Room 204  
**Wednesday** 11:00 - 1:00 PM

**Required Materials**  
Word Processor, Sketchbook,  
Adobe Illustrator

**Relevant Terms:**  
Color, Line, Shape, Layout,  
Typography, Readability

## **Project 1 - User Profile**

### **PROJECT DETAILS**

In this project, you will formulate an ideal user for your interface. This user should be the primary audience that you are designing for, though they will have some limitations. See below for more instructions.

### **OBJECTIVES**

#### **User Profile Information & Sketches**

- Generate information about your ideal user
- You should have the following information;
  - About (A full paragraph about the user)
  - Strengths (At least 3; must be relevant)
  - Frustrations (At least 3; One assigned by me; must be relevant)
  - Occupation and Education
  - Interface Usage and/or Other Brands
  - Three Word Summary
  - One additional Category of your choice
- Sketch **three** options for the general layout for your user profile, determining where information will be placed;
- Hold a group critique with classmates, discussing and improving your ideas;

#### **Design a User Profile**

- Use demonstrated Illustrator skills and asset sites to create a User Profile;
- Make sure your design considers all relevant terms;
- All required User Profile information must be included in this user profile

#### **Critique & Improve User Profile**

- Present user profile to the class
- Improve these profiles based on feedback about aesthetics and information from your classmates and the instructor

#### **Project Deliverables:**

- Written rough draft of User Profile Information;
- 3 Sketches of your user profile;
- One digital draft of your user profile;
- One final draft of your user profile

### **CRITIQUE**

Wednesday, September 4th

### **FINAL PROJECT DUE**

Sunday, September 8th

**Required Interview Questions and Answers**

**1 - What is your gender?**

- Man
- Woman
- Nonbinary or 2-Spirit
- Something Else

**2 - Select your Race (this question should be check boxes; this is based on the US Census).**

- Black or African American
- Native American or Alaska Native
- Asian
- White
- Native Hawaiian or Pacific Islander
- Multiracial
- Other

**3 - Select your Ethnicity (again, based on the US Census guidelines).**

- Hispanic or Latiné
- Non-Hispanic or Latiné

**4 - What level of education have you completed?**

- High School
- Some College
- Bachelor's Degree
- Graduate School

**5 - Do you have any movement, sensory, cognitive or environmental frustrations when using digital interfaces (you will have to explain these to your interviewee)?**

**6 - What is your occupation?**

**7 - What would you say are your strengths?**

**8 - What are your hobbies and/or interests?**

**9 - Do you have any specific brands, apps, games or websites you use regularly?**

**10 - How would you describe yourself in three words?**



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5965                              |
| Institution        | NMT                               |
| Applicant(s)       | heather.juarez@nmt.edu            |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-16 01:51 PM (US/Mountain) |



# Gened Request Form

## Contact Information

### Chief Academic Officer Name

STEVE SIMPSON

### Chief Academic Officer Email

STEVE.SIMPSON@NMT.EDU

### Registrar Name

HEATHER JUAREZ

### Registrar Email

heather.juarez@nmt.edu

### Course's Academic Department

Communication, Liberal Arts, Social Sciences

### Is this a Application a Re-Submission

yes

### Describe the Clarifications to the Original Application

Adjustment to the component skills, addressing clarity, while adding non specific examples to demonstrate how they are meeting the skills.

## Institutional Course Information

### Prefix

ARTS

### Number

1123L

### Title

Book Arts

### Number of credits

3

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

No

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

No

## Co-requisite Course

---

### Prefix

NA

---

### Number

NA

---

### Title

NA

## New Mexico Common Course Information

---

### Prefix

ARTS

---

### Number

1123L

---

### Title

Book Arts

## A. Content Area and Essential Skills

---

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

Creative & Fine Arts

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

---

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

1. Make a variety of book structures. 2. Integrate a book's content with an appropriate structure. 3. Recognize and appreciate a well-made book. 4. Analyze an artist's book with critical knowledge of technique, craftsmanship and history.

---

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

N/A

## Section 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.

**Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.**

Essential skill: Communication

Component Skills:

Genre and Medium Awareness, Application, and Versatility

This course requires a final research presentation that involves both oral and digital communication. Further, students work on “zines,” short, self-published booklets or pamphlets that integrate both narrative text and visual communication. Students address a variety of audiences. For example, the research presentation is intended for academic audiences, and the zines for a wider audience. Students display their booklets at the final semester Fine arts show, where they can be read by both NMT and Socorro community members.

Strategies for Understanding and Evaluating Messages

The research presentation teaches and evaluates students’ ability to locate supportive documentation for their arguments, and to apply a sociohistorical lens to understanding their readings. The zine assignment requires students to review existing examples that have political and cultural lenses, to set the tone for their own zine topics. For example, many students write on their experiences as nonbinary individuals and research other publications on transitioning (e.g., QZAP – The Queer Zine Archive Project). Students also need to evaluate how their message is best received by others in the classroom and in the community, and tailor their messages accordingly.

Evaluation and Production of Arguments

As students research for their historical presentation, they are taught how to generate MLA citations and how to identify appropriate, useful sources using library resources. This is taught during a dedicated citation workshop, which covers citing images, citing sources, in-text citations, using library resources (and why these resources are better than Google), and the use of the CRAAP and SIFT methods (Currency, Relevance, Authority, Accuracy and Purpose; Stop, Investigate, Find and Trace). We also cover Boolean phrases, and how to find a physical book in the library. This is then assessed on the final rubric of this presentation.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Essential Skill: Critical Thinking

Component Skills:

Problem Setting

Students choose their own topic for their research presentation, delineating their own research questions. These are guided by the project description and rubric, as well as my feedback on their presentation outlines. In addition, all book assignments (exemplified by the zine) require students to develop their own concepts

based on existing examples (physical and digital) and their own independent research. As part of this class, students have to first create a traditional book, but then they have to construct a book that is not made out of paper. Thus students need to approach the problem of what other materials might work (e.g., tin foil, paint, dried cucumbers) and how to make it work as a book.

### Evidence Acquisition

For the research presentation, students must identify and gather both textual and visual evidence for their claims. For example, students gather academic journal articles, books, websites such as the Metropolitan Museum of Art, visual examples of different book designs, as well as information on process (how the books were constructed). These must be relevant to their final research presentation, and must be discussed directly as the student presents. These usually have a minimum, which depending on the semester can range from 3-5; this simply depends on the amount of time we have to present these at the end of the semester.

### Evidence Evaluation

Students are taken to the library as part of the class, where library staff provide methods for determining the effectiveness and applicability of sources. For research presentations, students are taught to use the CRAAP and SIFT methods (Currency, Relevance, Authority, Accuracy and Purpose; Stop, Investigate, Find and Trace). They also learn how to fact check online sources for accuracy and purpose. This is evaluated on the rubric, as well as through my review of their presentation outlines.

### Reasoning/Conclusion

Research for historical presentations requires students to argue their points related to the topics cultural, social and historical relevance, and to make their own conclusions about the importance of the topic chosen (EX - Benjamin Franklin's Poor Richard's Almanac was a culturally significant publication series because it encapsulated both the relevant issues of the day and the general sense of humor popular at the time - an invaluable cultural resource for historians and the general public alike.)

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

Essential Skill: Personal and Social Responsibility (only 2 of 5 needed)

Component skills:

### Intercultural reasoning and intercultural competence

The Zine assignment requires students to develop zines related to their own personal, cultural or social justice issues and to present these in critique, forming opinions of others' work and offering constructive advice to one another that values other students' experiences, cultural backgrounds, etc. . These zine topics have ranged from sharing a generations old pesto recipe to zines about the real meaning of anarchy and zines about the trans experience.

### Collaboration skills, teamwork and value systems

Critique and teamwork are a separate, independent grade. Critique looks different over time, but I've attached an example of a guided critique. Over time, the guidance falls away, allowing for more organic conversations within groups or across the entire class, depending on course size. In critique, students must learn to consider their own strengths and weaknesses, identify the strengths and weaknesses of their work, consider the opinions of others, and suggest improvements to other's designs. Critique, historically and in my classes, serves to develop the aesthetic and conceptual value system of a student. They are alternately cast in the role of stakeholder (especially when they are paired and have to learn and represent the work of their group

member to the class at large), reader and critic. In addition, some books are created by a group of students working together and responding to changes made by each other (see attached example).

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.nmt.edu/academicaffairs/assessment/gened.php)

<https://www.nmt.edu/academicaffairs/assessment/gened.php>

# Application History

| Type          | username               | Text                                                                | Timestamp                          |
|---------------|------------------------|---------------------------------------------------------------------|------------------------------------|
| Submittal     | heather.juarez@nmt.edu | Submitted by heather.juarez@nmt.edu                                 | 2026-02-16 01:51 PM (US /Mountain) |
| Authorization | heather.juarez@nmt.edu | heather.juarez@nmt.edu has authorized the application for submittal | 2026-02-16 01:51 PM (US /Mountain) |
| Created       | heather.juarez@nmt.edu | Application started by heather.juarez@nmt.edu                       | 2026-02-16 11:47 AM (US /Mountain) |

Rebecca Spruill  
Professor  
[rebecca.spruill@nmt.edu](mailto:rebecca.spruill@nmt.edu)

**Office Hours:**  
Fitch Hall, Room 204  
Wednesday, 2-4 pm

**PRESENTATION  
REQUIREMENTS:**

- 7-10 minutes long, including discussion of design
- At least 3 sources
- At least 4 properly cited and discussed images
- MLA Format
- In-Text Citations
- Written out and thorough presentation notes
- Meets all objectives on rubric
- Proper grammar & spelling
- On time at all stages

**ARTS 1123 - Book Arts  
BOOK ARTS RESEARCH PRESENTATION**

**Project Details**

Each student is required to create a 7-10 minute long **research presentation** with a works cited page (MLA format) on a selected historical book, book style or book artist.

For instance, if you research The Book of Kells, your presentation will discuss the visuals of The Book of Kells, how the book influenced history and society, and anything else required by the rubric. Students may choose a topic from the provided list or suggest a research topic, **with instructor approval**.

This research presentation will identify the topic and at least four example images that relate to the topic, the cultural and historical context of the topic, the influence and processes of the topic, and any relevant technological advances to the topic's production, etc. (See rubric for more).

**Objectives:**

Students will be able to:

1. Develop a vocabulary necessary to discussing works of book design within the discipline of history.
2. Ability to express their own preferences and aesthetics through choice of topic;
3. Ability to describe a book or book artist in their cultural and social context;
4. Discuss (written/oral) a given work of book design in terms of its form, contextual history, function, cultural and historical meaning.
5. Ability to evaluate the authority of sources and appropriately cite sources in your presentation

**IMPORTANT DATES:**

- **February 14th:** Topic Selection Due
- **TBD:** Citation Workshop
- **March 15th:** Presentation Outlines Due
- **Finals Week:** Final Presentations

**SUGGESTED BOOKS:**

|                                                           |                                    |
|-----------------------------------------------------------|------------------------------------|
| The Book of Kells                                         | Riot grrrl zines                   |
| Malleus Maleficarum                                       | The Discovery of Witchcraft (Scot) |
| The Dresden Codex                                         | Hokusai's Manga                    |
| The Tale of Genji                                         | Les Tres Riches Heures             |
| Patrick Henry Reason                                      | Caldecott                          |
| The Book of Shah Jahan                                    | Poor Richard's Almanac             |
| Benjamin Bannaker's Almanac                               | Black Panther Newspaper            |
| Poems on Various Subjects, Religious and Moral - Wheatley |                                    |
| 1,001 Arabian Nights.                                     | The Coffin Texts                   |
| Beardsley's Yellow Book                                   | Qur'an                             |
| The Lotus Sutra                                           | The Kama Sutra                     |
| Lindisfarne Gospels                                       | Voynich Manuscript                 |
| The Rubaiyat of Omar Khayyam                              | Dead Sea Scrolls                   |



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5966                              |
| Institution        | NMT                               |
| Applicant(s)       | heather.juarez@nmt.edu            |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-16 01:49 PM (US/Mountain) |



# Gened Request Form

## Contact Information

---

### Chief Academic Officer Name

STEVE SIMPSON

---

### Chief Academic Officer Email

STEVE.SIMPSON@NMT.EDU

---

### Registrar Name

HEATHER JUAREZ

---

### Registrar Email

heather.juarez@nmt.edu

---

### Course's Academic Department

Communication, Liberal Arts, Social Sciences

---

### Is this a Application a Re-Submission

yes

---

### Describe the Clarifications to the Original Application

Adjustment to the component skills, addressing clarity, while adding non specific examples to demonstrate how they are meeting the skills.

## Institutional Course Information

---

### Prefix

ARTS

---

### Number

2127

---

### Title

Digital Interface Design

---

### Number of credits

3

---

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

No

---

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

No

## Co-requisite Course

---

### Prefix

NA

---

### Number

NA

---

### Title

NA

## New Mexico Common Course Information

---

### Prefix

ARTS

---

### Number

2127

---

### Title

Digital Interface Design

## A. Content Area and Essential Skills

---

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

Creative & Fine Arts

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

By exploring content through exercises, discussions, demonstrations, readings, research, assignments, and critiques, students will have achieved the following: 1. The ability to define interface design's place in the fields of graphic, UI/UX, and digital product design. 2. Successfully work through the stages of design development, from concept to working prototype. 3. Learn and utilize digital tools and services unique to the creation of digital interfaces. 4. Make creative choices appropriate to the brand, service, or product their interface represents. 5. Understand that aesthetics is only part of the process, which also includes user experience. 6. Apply various analog and digital tools used in graphic design. 7. Submit and present design work in a manner suitable for critique.

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

NA

## Section 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.

**Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.**

Essential skill: Communication

Component Skills:

Genre and Medium Awareness, Application, and Versatility

This course entirely focuses on communication and interaction with the user through development of various digital interfaces, including web and app design. Students research existing interfaces (e.g., menu design in video games or websites), analyze how the information is laid out, and make recommendations for usability and accessibility. Genres range across, video game menus, smart phone apps, and wayfinding (e.g., digital directions for navigating a college campus).

Strategies for Understanding and Evaluating Messages

To support the development of these interfaces, students do several reading assignments that address reading for main points, and they are expected to do independent research on existing user interfaces and other projects they produce. For example, the students learn about disability and design, e.g., how the ability to use a design changes (e.g., people's ability to swipe decreases as they age), how factors such as color, brightness, and contrast affect who can receive messages and how they are received.

Evaluation and Production of Arguments

Students are expected to find and cite these existing user interfaces and evaluate their strengths/weaknesses and whether or not they would work for their specific user profile (developed at the start of the semester). Students make recommendations on how to improve an interface. Students need to sketch/plan their own version of the interface based on their findings. and provide rationale for why the changes improve accessibility or effectiveness.

---

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Essential Skill: Critical Thinking

Component Skills:

**Problem Setting**

Students are expected to address every assignment posed (a problem of its own) with the unique needs of their user in mind - often something that creates new problems that must be both identified by the student and addressed in the student's design. For example, students start by creating a user persona that will be their "goal post," so to speak. Then, in the app design project, they need to think about what kind of app a person who fits that profile might want, and how to make that app usable to that user. For example, if their user is visually impaired, they need to think of how to create an interface that responds to the user's needs. In addition, all design assignments are problem solving, as they are tasked with a deliverable and must (with minor guidance) decide how to solve said problem

**Evidence Acquisition**

Again, students are expected to find and cite existing user interfaces and evaluate their strengths/weaknesses and whether or not they would work for their specific user profile. In addition, students do introductory user tests in class; they collect, analyze and discuss their data in short data summaries - especially for their final project, though they do practice user testing on each other throughout the entire semester.

**Evidence Evaluation**

Again, students are expected to evaluate the strengths/weaknesses of existing user interfaces for every assignment and determine whether or not they would work for their specific user profile. In addition, students do introductory user tests in class; they collect, analyze and discuss their data in short data summaries - especially for their final project, though they do practice user testing on each other throughout the entire semester. For example, students create a paper prototype and later a hi-fi prototype that they test on actual users (in some cases, students at NMT's Student Research Symposium were the test users) and collect information on whether their design effectively solved the problems identified initially and revise accordingly.

**Reasoning/Conclusion**

Students then interpret their user tests and make changes to their designs based on the feedback they receive; this course ends with them summarizing the feedback of their last user test. For example, one student received feedback from users that indicated that users were confused by the information pathways (e. g., for a meal-delivering app, people would miss the recipe breakdowns for menu items). The student learned the valuable lesson that these users were not just "haters," but had legitimate problems navigating the app.

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global** In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.

Essential Skill: Personal and Social Responsibility (only 2 of 5 needed)

Component skills

Intercultural reasoning and intercultural competence

Social Justice, specifically through Accessibility and disability theory, is discussed repeatedly throughout the semester as a guiding concern for designs in this course. Students user personas always have a randomly assigned “limitation” such as vision impairment or mobility limitations, which they are then held accountable for considering from the start of the semester. This is represented by a line on the project rubric that discusses the audience. In addition, homework assignments focusing on accessibility challenge students to consider others’ perspectives, which then continues in critique, as students hold each other accountable for considering their audience (the user).

Ethical Reasoning

Accessibility assignment example is one of several homeworks that teach students ethical frameworks throughout the semester by presenting them with ethical issues and requirint them to explore solutions, usually based on knowledge of design softwares, their personal experiences and theory.

Collaboration skills, teamwork and value systems

Critique and teamwork are a separate, independent grade. Critique looks different over time, but I’ve attached an example of a guided critique. Over time, the guidance falls away, allowing for more organic conversations within groups or across the entire class, depending on course size. In critique, students must learn to consider their own strengths and weaknesses, identify the strengths and weaknesses of their work, consider the opinions of others, and suggest improvements to other’s designs. Critique, historically and in my classes, serves to develop the aesthetic and conceptual value system of a student.

## Section D. Assessment Plan

[Link to Institution's General Education Assessment Plan](https://www.nmt.edu/academicaffairs/assessment/gened.php)

<https://www.nmt.edu/academicaffairs/assessment/gened.php>

# Application History

| Type          | username               | Text                                                                | Timestamp                          |
|---------------|------------------------|---------------------------------------------------------------------|------------------------------------|
| Submittal     | heather.juarez@nmt.edu | Submitted by heather.juarez@nmt.edu                                 | 2026-02-16 01:49 PM (US /Mountain) |
| Authorization | heather.juarez@nmt.edu | heather.juarez@nmt.edu has authorized the application for submittal | 2026-02-16 01:49 PM (US /Mountain) |
| Created       | heather.juarez@nmt.edu | Application started by heather.juarez@nmt.edu                       | 2026-02-16 12:02 PM (US /Mountain) |

**Rebecca Spruill**  
Assistant Professor  
[rebecca.spruill@nmt.edu](mailto:rebecca.spruill@nmt.edu)

**Office Hours:**  
Fitch Hall, Room 204  
**Wednesday** 11:00 - 1:00 PM

**Required Materials**  
Word Processor, Sketchbook,  
Adobe Illustrator

**Relevant Terms:**  
Color, Line, Shape, Layout,  
Typography, Readability

## **Project 1 - User Profile**

### **PROJECT DETAILS**

In this project, you will formulate an ideal user for your interface. This user should be the primary audience that you are designing for, though they will have some limitations. See below for more instructions.

### **OBJECTIVES**

#### **User Profile Information & Sketches**

- Generate information about your ideal user
- You should have the following information;
  - About (A full paragraph about the user)
  - Strengths (At least 3; must be relevant)
  - Frustrations (At least 3; One assigned by me; must be relevant)
  - Occupation and Education
  - Interface Usage and/or Other Brands
  - Three Word Summary
  - One additional Category of your choice
- Sketch **three** options for the general layout for your user profile, determining where information will be placed;
- Hold a group critique with classmates, discussing and improving your ideas;

#### **Design a User Profile**

- Use demonstrated Illustrator skills and asset sites to create a User Profile;
- Make sure your design considers all relevant terms;
- All required User Profile information must be included in this user profile

#### **Critique & Improve User Profile**

- Present user profile to the class
- Improve these profiles based on feedback about aesthetics and information from your classmates and the instructor

#### **Project Deliverables:**

- Written rough draft of User Profile Information;
- 3 Sketches of your user profile;
- One digital draft of your user profile;
- One final draft of your user profile

### **CRITIQUE**

Wednesday, September 4th

### **FINAL PROJECT DUE**

Sunday, September 8th

**Required Interview Questions and Answers**

**1 - What is your gender?**

- Man
- Woman
- Nonbinary or 2-Spirit
- Something Else

**2 - Select your Race (this question should be check boxes; this is based on the US Census).**

- Black or African American
- Native American or Alaska Native
- Asian
- White
- Native Hawaiian or Pacific Islander
- Multiracial
- Other

**3 - Select your Ethnicity (again, based on the US Census guidelines).**

- Hispanic or Latiné
- Non-Hispanic or Latiné

**4 - What level of education have you completed?**

- High School
- Some College
- Bachelor's Degree
- Graduate School

**5 - Do you have any movement, sensory, cognitive or environmental frustrations when using digital interfaces (you will have to explain these to your interviewee)?**

**6 - What is your occupation?**

**7 - What would you say are your strengths?**

**8 - What are your hobbies and/or interests?**

**9 - Do you have any specific brands, apps, games or websites you use regularly?**

**10 - How would you describe yourself in three words?**





# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5967                              |
| Institution        | NMT                               |
| Applicant(s)       | heather.juarez@nmt.edu            |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-16 01:47 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

STEVE SIMPSON

### Chief Academic Officer Email

STEVE.SIMPSON@NMT.EDU

### Registrar Name

HEATHER JUAREZ

### Registrar Email

heather.juarez@nmt.edu

### Course's Academic Department

Communication, Liberal Arts, Social Sciences

### Is this a Application a Re-Submission

yes

### Describe the Clarifications to the Original Application

Adjustment to the component skills, addressing clarity, while adding non specific examples to demonstrate how they are meeting the skills.

## Institutional Course Information

### Prefix

ENGL

### Number

2410

### Title

Autobiography

### Number of credits

3

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

No

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

No

## Co-requisite Course

---

### Prefix

NA

---

### Number

NA

---

### Title

NA

## New Mexico Common Course Information

---

### Prefix

ENGL

---

### Number

2410

---

### Title

Autobiography

## A. Content Area and Essential Skills

---

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

Humanities

---

### Selected Areas

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

## Section B. Learning Outcomes

---

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

1. Read and analyze autobiographical works. 2. Identify literary models commonly used in the autobiography genre. 3. Incorporate/respond to literary models in student's own creative work. 4. Critique objectively student's own work and that of others. 5. Revise and polished drafts of autobiographical work.

---

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

NA

## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Critical Thinking

This course focuses on Autobiography as narrative structure. In addition to reading and comprehending Autobiographies as written narratives, the students look deeper into written materials and identify the structure used as well as the main points and problems to be solved. The students conduct a complex analysis of bias, reliability and validity not just to understand the nature of bias, reliability and validity, but to realize that in some contexts, such as autobiographical inquiry, bias leads to reliability and validity of the author.

- Problem Setting: Students are required to analyze the problems inherent in writing autobiographical narratives through discussions and lectures. The students are encouraged to view autobiographical works as a set of problems to explore. How does an author explore their own life in writing, what makes this author's text exceptional, and how do they apply these ideas to their own writing are samples of questions the students ask themselves in the course. A critical aspect of problem setting in autobiographical writing is thinking about how best to represent one's life experience to a potentially skeptical (or even hostile) audience. One student, for example, described their experience transitioning in a short piece intended for a podcast through the school online radio station (KTEK), which in today's climate involves thinking about how to represent this experience to students coming from very different social and political backgrounds.
- Evidence Acquisition: The students apply this model in order to write their own autobiographical narratives and build their own credibility. While bias often has negative connotations, the students are invited to consider the positive side of bias through reading professional writers' autobiographies and writing their own autobiography. Students must consider an author's reliability and credibility by examining the legitimacy of evidence authors provide in autobiographical works. These assignments also require some research into potential audiences, whether by reading examples of counter narratives or editorials, or through direct interactions with potential audience members.
- Evidence Evaluation: Students develop theories about authors' reliability and what writing methods lead to credibility and legitimacy and what methods don't. The students are then required to apply these ideas within their own writing. Additionally, the students are required to write an analysis of an autobiographical work that utilizes all of these critical thinking skills and applies them to develop conclusions about the successful/unsuccessful outcome of an autobiography of their own choice. Students collect a variety of examples or counternarratives on their subject, and must analyze these examples for biases, worldviews, or even accuracy. We discuss, for example, the controversy around James Frey's Million Little Pieces, which raises the question of representation in autobiographical writing, or how autobiographical accounts of attendees at the Jan 6 insurrection at the Capitol are used to spread misinformation.
- Reasoning/Conclusion: Students reach conclusions through reading, analysis, discussion, and lectures. The students' written analysis provides a substantive view of how to apply critical thinking skills within their own writing and create well-reasoned argumentation that can apply to all critical analyses of writing. In many ways, the finished narratives are their conclusions, but students are also asked to write reflections on these narratives to explain how they solved the problems of audience identified earlier in the assignment

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global** In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.

#### Personal and Social Responsibility

- Intercultural Reasoning and Intercultural Competence: The class is required to write their own autobiography allowing each student to examine their own understanding of personal, social, cultural or social justice issues. Each student writes their own autobiography focusing on a specific aspect of their life and gathering information throughout their own personal experience in order to further explore their comprehension of issues as they understand them. This requires use of language (for example, syntax, diction, etc.) to become forefront in their own writing. Understanding the language that people use based on cultural and socio-linguistic patterns becomes imperative within the context of personal and social responsibility. Also, given the very personal nature of the class, students are exposed to viewpoints very different from their own. For example, one student wrote about the experiences of family members from Mexico and their anxieties about ICE activities in their hometowns, which was a perspective that made some students in class uncomfortable initially. But discussing these narratives helps for mutual understanding of cultural backgrounds.
- Collaboration Skills, Teamwork and Value Systems: A major aspect of this class is for the students to not only write their own autobiographies, but for each student to participate in workshops where each student's autobiography is discussed within the classroom. It is imperative for students to learn the value of academic critique in a classroom environment and necessary for each person to better their own work. This aspect of the class also teaches value systems to each student by doing workshops where the work itself is evaluated rather than the person or their own experiences being evaluated.
- Civic Discourse, Civic Knowledge Engagement: During the workshop process of the class, students learn that the way they view local and global issues is from their own viewpoint and there are a multitude of others that are equally valid. The workshop environment only works if it is understood that students need to respect each others' views, listen, and comment carefully and tactfully. By working together, they are able to gain a stronger sense of social and cultural responsibility.

---

**Information & Digital Literacy. Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry.** In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy.

#### Information and Digital Literacy

- Authority and Value of Information: Through both the reading of autobiography and the writing process of creating their own autobiographies students learn about the nature and ethics of recognizing authority. There are numerous discussions throughout the course analyzing how authors build authority and in what ways they use personal information and personal narratives to show that authority. Students then use this knowledge to build their own authority as authors by writing their own autobiography. Also, students conduct both primary and secondary research on subjects pertinent to their autobiographies. For secondary research, students must evaluate sources for credibility and accuracy and learn how to gauge the authority of the sources, as with any sources obtained for, say, a research paper.
- Digital Literacy: Students explore the complex process of writing, editing, creating and designing their own autobiographical work in a way that is consistent with modern publishing standards. One of the texts that is used throughout the course, Tell it Slant is a guide not just on how to write an autobiographical work, but how to format and design work that meets current digital publication requirements. Students also explore the many digital options for delivering autobiographical works, such as podcasts, websites, youtube videos. Especially in today's political climate, students need to be able to evaluate the purpose, motivations, and even the accuracy of online posts. On one hand, part of reading autobiographical work is understanding

that you are reading an author's perspective, which may or may not be entirely accurate. However, they also need to be able to gauge when an author is using their perspective to spread misinformation about events (e. g., the 2020 election claims).

- Research as Inquiry: The class is designed around researching how authors have written their autobiographies in order to research the process of writing one's own autobiography. Additionally, students are required to write a literary analysis of an autobiographical work of their choosing in order to research what makes a work successful, compelling or otherwise engaging and meaningful to a wider audience. This allows students to understand academic research as a process that can be applied within their own work.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.nmt.edu/academicaffairs/assessment/gened.php)

<https://www.nmt.edu/academicaffairs/assessment/gened.php>

# Application History

| Type          | username               | Text                                                                | Timestamp                          |
|---------------|------------------------|---------------------------------------------------------------------|------------------------------------|
| Submittal     | heather.juarez@nmt.edu | Submitted by heather.juarez@nmt.edu                                 | 2026-02-16 01:47 PM (US /Mountain) |
| Authorization | heather.juarez@nmt.edu | heather.juarez@nmt.edu has authorized the application for submittal | 2026-02-16 01:47 PM (US /Mountain) |
| Created       | heather.juarez@nmt.edu | Application started by heather.juarez@nmt.edu                       | 2026-02-16 12:06 PM (US /Mountain) |

# English 2410 – Autobiography

## Essay #1: Final Draft Assignment

Your essay must be typed, double-spaced, 12-point font, in standard format and in a reasonably easy to read font (Cambria, Arial, Helvetica, Times New Roman, etc.) and should include an introduction, body, conclusion and a title.

1. The first essay for the class will focus on standard autobiography. You can pick your own topic and style of writing, but it must be an essay about your own life written from your own perspective. There are many different ways to do this, which we will be discussing in class, but you should find a topic you feel comfortable sharing with the entire class as everyone will be reading it and workshopping it. It is perfectly acceptable to experiment with time, structure and writing style within your autobiography as we saw with David Sedaris. Please consider our discussions of the positive side of bias through reading the authors we have read and apply it to your own writing. You will apply your understanding of how an author builds reliability and credibility in order to build your own legitimacy and credibility as an author.
- The essay must be a minimum of 1200 words and a maximum of 2400 words (4-8 pages).
  - Please remember to edit your papers for grammar, punctuation and spelling.
  - The rough draft will be at least 3-4 pages in length and contain a primary topic that you want to write about.



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

**Autobiography – Grading Rubric**

|                          | Excellent (A)                                                                                                   | Good (B)                                                                                                            | Sufficient (C)                                                                                                              | Requires Development (D)                                                                           | Requires Serious Development (F)                                                      |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Defamiliarization prompt | Autobiography expertly dramatizes key memory in 4+ pages, using strong story arc (intro, rising action, climax) | Autobiography dramatizes key memory in 4+ pages, but sometimes wanders from purpose, or story arc needs development | Autobiography somewhat unsure of what is being dramatizes, or major storytelling component missing                          | Autobiography unsure of purpose, or fails to meet length requirements                              | Autobiography does not discernibly address prompt whatsoever                          |
| Organization             | Paragraphs are organized purposefully and powerfully. Transitions fluid and masterful.                          | Paragraphs are strong and well-organized, but with some lapses in cohesion or with some awkward transitions.        | Some paragraphs underdeveloped, or contain multiple ideas fighting for room. Transitions require serious work.              | Paragraphs require significant revision, or Autobiography is redundantly or confusingly organized. | Autobiography shows no clear organizational scheme, and may digress into incoherence. |
| Imagery                  | Imagery is plentiful and vivid. Autobiography “shows, doesn’t tell” throughout. Lush setting.                   | Imagery in some key scenes, but lacking in others. Needs some more “showing.”                                       | Autobiography includes some imagery, but scantily. Autobiography would benefit from much more significant detail/ “showing” | Imagery is limited or rushed. Autobiography reads more like an academic essay than a story.        | No imagery.                                                                           |
| Mechanics                | Autobiography is immaculately proofread for punctuation, grammar, and usage                                     | Autobiography contains 1-2 punctuation, grammar, and/or usage errors per page                                       | Autobiography contains 3-4 punctuation, grammar, and/or usage errors per page                                               | Autobiography contains 5-8 punctuation, grammar, and/or usage errors per page                      | Autobiography contains more than 8 punctuation, grammar, and/or usage errors per page |
| Style                    | Vocabulary is precise, and doesn’t disguise meaning. Writing is elegant and rich in metaphor.                   | Vocabulary is colorful and varied, but sometimes unclear or imprecise.                                              | Vocabulary is imprecise and sentence length/type may not be varied.                                                         | Writer’s diction and sentence structure require serious revision/editing.                          | Writer’s tone or diction is totally inappropriate for assignment.                     |

GRADE:



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5968                              |
| Institution        | NMT                               |
| Applicant(s)       | heather.juarez@nmt.edu            |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-16 01:42 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

STEVE SIMPSON

### Chief Academic Officer Email

STEVE.SIMPSON@NMT.EDU

### Registrar Name

HEATHER JUAREZ

### Registrar Email

heather.juarez@nmt.edu

### Course's Academic Department

Communication, Liberal Arts, Social Sciences

### Is this a Application a Re-Submission

yes

### Describe the Clarifications to the Original Application

The committee wanted a few more specific examples from the class to show the component skills in action.

## Institutional Course Information

### Prefix

FDMA

### Number

1266

### Title

Digital Techniques in Visual Arts

### Number of credits

3

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

No

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

No

## Co-requisite Course

---

### Prefix

NA

---

### Number

NA

---

### Title

NA

## New Mexico Common Course Information

---

### Prefix

FDMA

---

### Number

1266

---

### Title

Digital Techniques in Visual Arts

## A. Content Area and Essential Skills

---

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

Creative & Fine Arts

---

### Selected Areas

Critical Thinking, Personal & Social Responsibility, Communication

## Section B. Learning Outcomes

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

1. Develop skills in a variety of Adobe® programs through tutorials, research and projects. 2. Develop traditional and digital production understanding for 2-D print and web projects. 3. Develop the ability to think conceptually and critically. 4. Develop the ability to articulate constructive criticism and guidance for suggested rework of the projects. 5. Build and practice using design vocabulary while discussing your own (and others') work.

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

NA

## Section 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.

### Communication. Genre and Medium Awareness, Application and Versatility; Strategies for Understanding and Evaluating Messages; and Evaluation and Production of Arguments. In this box, provide a narrative that explains how the proposed course addresses all of the components of communication.

Narrative

Essential skill: Communication

Component Skills:

-Genre and Medium Awareness, Application, and Versatility

Students write, digitally design and present their work for critique in all assignments in this class, exemplified by both social media infographic and historical posters (described in the project description). This grade is not assessed on the rubric, to clarify - it is an independent critique grade. For example, students research a historical design poster style (e.g., minimalism, art nouveau) and design a flyer for a modern event employing this style). This requires them to research existing examples of the genre, identify and characterize the style, and use the tools of that style in their poster design.

-Strategies for Understanding and Evaluating Messages

In the social media infographic assignment research, students are required to locate supportive documentation, read with the lens of a general member of the public or a community member and as a stakeholder at a given nonprofit. They are taught to read for main points and look for evidence that supports their arguments. They also evaluate the messages conveyed by visuals. One student, for example, research H. pylori, bacteria common in water on Navajo reservations, created a series of slides to be displayed on social media meant to communicate the experience of Navajo people on mitigation techniques. In critique sessions with fellow students, they discussed how well these messages were conveyed.

-Evaluation and Production of Arguments

Both included assignments require students to find reliable sources using the CRAAP and SIFT method, citing these sources both in-text and in a works cited. For instance, the social media graphics required citations be included in the multipage social media design (using MLA format). In the case of the infographic on H. pylori in Navajo reservations, the student needed to produce a visual argument that compelled audiences to take an action as a result of viewing the visual.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

Essential Skill: Critical Thinking

Component Skills:

**-Problem Setting**

Students choose their problems in historical poster design, finding resources and examples of the style they will later use, as well as deciding what event the poster will promote. For example, the students select a style (e.g., art nouveau) and a contemporary event (e.g., a campus event of a rubber duck race) and determine how to represent that event with the selected style (in this case, psychedelia). Similarly, the social media infographic requires them to determine a social, environmental or cultural issue to research and turn into a series of graphics.

**-Evidence Acquisition**

Students learn to communicate in a variety of media, presenting research visually (poster design), in writing (research for homework) and in a combination of the two (social media infographics). Students must gather both textual and visual evidence, occasionally being tasked with generating their own informative visuals (illustrations, graphs, etc) based on examples they find. This evidence includes academic sources and samples of the types of visuals that they are creating.

**-Evidence Evaluation**

Students go to the library as part of the class and receive instruction from library staff on how to evaluate the textual and visual evidence that they acquire for relevance and accuracy. Both social media infographics and historical poster design require students to research their topic, and they are taught to use either the CRAAP or SIFT method to determine the validity of their sources. There is also a media literacy aspect of the class which requires students to evaluate the purpose and potential political biases in online media.

**-Reasoning/Conclusion**

Students are required to advocate for a specific “call to action” in the development of their social media infographics, and to make a clear conclusion about what could be done to address their chosen issue. The historical poster design requires students to use the visual communication tools they researched to create their own poster, a direct visual representation of the conclusions of their research. (IE - this poster, designed by a student, represents their researched knowledge of minimalism or Memphis style).

---

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

Essential Skill: Personal and Social Responsibility (only 2 of 5 needed)

Component skills

**-Intercultural reasoning and intercultural competence**

Student topics for their infographics have to address personal, cultural, social, environmental and/or social justice issues. An example is a student who discussed H. Pylori in Navajo/Diné water as both a social justice issue and a personal issue (this is where they are from). They discussed the topic specifically through the relatively lack of clean water on the reservation during COVID lockdown and the safety issues that presented.

**-Collaboration skills, teamwork and value systems**

Critique and teamwork are a separate, independent grade. Critique looks different over time, but I've attached an example of a guided critique. Over time, the guidance falls away, allowing for more organic conversations within groups or across the entire class, depending on course size. In critique, students must learn to consider their own strengths and weaknesses, identify the strengths and weaknesses of their work, consider the opinions of others, and suggest improvements to other's designs. Critique, historically and in my classes, serves to develop the aesthetic and conceptual value system of a student.

**-Civic discourse, civic knowledge and engagement – local and global**

Social media infographics require students to actively consider how to engage their local community members and/or global readers while explaining their own, well-researched perspectives on their chosen

topics. Discussions of legibility, readability and stakeholder lenses related directly to this project, which cast the student in the role of a person literally generating civic discourse for the sake of virtual engagement.

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.nmt.edu/academicaffairs/assessment/gened.php)

<https://www.nmt.edu/academicaffairs/assessment/gened.php>



# Application History

| Type          | username               | Text                                                                | Timestamp                          |
|---------------|------------------------|---------------------------------------------------------------------|------------------------------------|
| Submittal     | heather.juarez@nmt.edu | Submitted by heather.juarez@nmt.edu                                 | 2026-02-16 01:42 PM (US /Mountain) |
| Authorization | heather.juarez@nmt.edu | heather.juarez@nmt.edu has authorized the application for submittal | 2026-02-16 01:42 PM (US /Mountain) |
| Created       | heather.juarez@nmt.edu | Application started by heather.juarez@nmt.edu                       | 2026-02-16 12:11 PM (US /Mountain) |

**Rebecca Spruill**  
Assistant Professor  
[rebecca.spruill@nmt.edu](mailto:rebecca.spruill@nmt.edu)

**Office Hours:**  
Fitch Hall 204  
Mon: 10-Noon  
Tues: 12:30-1:30 PM

**SOFTWARE**  
Adobe Photoshop, Illustrator Optional

**RELEVANT TERMS**  
Shape, Color, Line, Layout, Hierarchy,  
Typesetting (kerning, leading, tracking,  
baseline), Readability, Texture

**FINAL PROJECT DUE**  
Monday, October 17th

## **FDMA 189 - Digital Techniques in Visual Art**

### **Project 3: Historically Inspired Poster Design**

#### **PROJECT DETAILS**

For this project, we will be putting ourselves in the position of a working designer, and creating a poster for an event, based on our personal interests. We will start by researching historical poster styles and writing a 2 paragraph description of them. These styles are listed on the next page.

In addition to this research, we will write out the Who, What, When, Where and Why of poster design. Then we will create several poster layout sketches, describing where this information will be found in our posters and any other forms or visual content that will be included. Finally, we will produce a final poster, after going through critiques and revisions.

#### **OBJECTIVES**

##### **Research:**

- Research one of the styles listed & write a 2 paragraph description of the style (see next page for more details);
- Choose an event to promote (either a convention, concert, or a movie)
- Decide the Who, What, Where, When and Why of your event (see next page);
- Create 3 layout sketches showing how your poster could be arranged.

##### **Design:**

- Use the above research and demonstrated skills to inform problem-solving while designing an event poster;
- Consider the 5 Ws and the style you are working in;
- Evaluate success of self and classmates' designs;
- Provide critical feedback to self and classmates;
- Produce one final poster design

##### **Project Deliverables:**

- Research Paragraphs;
- Event Poster information & 5 W's;
- At least 3 sketches of poster layouts (in Sketchbook);
- At least two poster design drafts;
- One finalized poster, based on critiques;
- Supplemental Readings, if assigned

**Rebecca Spruill**  
Assistant Professor  
[rebecca.spruill@nmt.edu](mailto:rebecca.spruill@nmt.edu)

**RESEARCH POSTER STYLES:**

- Art Nouveau
- Art Deco
- Polish
- Swiss/International Style
- Psychedelic
- Punk/DIY

**ARTH 189 - Digital Techniques in Visual Art**  
**Project 3: Historically Inspired Poster Design**

**RESEARCH REQUIREMENTS:**

I am expecting a two paragraph summary that describes your historical style's visuals, including the kinds of colors, shapes, lines, layouts, and textures that are common in the posters. Include a works cited page in MLA format **with at least 2 reputable sources.**

This summary should be in Times New Roman, 12 point font and double-spaced. Include at least 2 example images, alongside the name of the designer (if available). While the examples used in your papers do not have to be event posters, be sure to think about how you can adapt this style into your event poster.

**I strongly suggest using Google Scholar through NMT's website, as it seems to have more resources on design.**

**EVENT POSTER INFORMATION:**

The following is a roadmap of information that should be written and submitted separately. This information will be included in your poster; some of this information will be shown explicitly (written out in type) while some can be implied with visuals in your poster.

- **Who** is involved in the event? Who are the organizers or the financial backers? Who is your audience?
- **What** do people need to know about the event?
- **When** is the event? When are the dates for ticket purchasing? Does the event repeat annually? Will there be multiple events like this one?
- **Where** is the event? Will the event-goers need anything? (For instance, if it's a book-signing or a drive-in movie).
- **Why** should your audience want to go?

**FDMA 189 - DIGITAL TECHNIQUES IN VISUAL ART RUBRIC | SPRUILL**

|                                                               |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process/Concept                                               | <p><b>5</b> Project shows maturity and self-direction with strong evidence of an idea-driven process and concept-based solutions. Demonstrates sophisticated research skills, original thought, awareness of audience and extreme depth of communication.</p> | <p><b>4</b> Project shows self-direction with good evidence of an idea-driven process and concept-based solutions. Demonstrates aspects of good research, original thought, and/or awareness of audience, though one of these areas lacks the utmost depth. Level of communication is very good.</p> | <p><b>3</b> Project shows some self-direction, though process and/or solution could indicate stronger emphasis on concept. Average demonstration of research, original thought, and/or awareness of audience, though more than one of these areas lack sufficient depth. Level of communication is good.</p>          | <p><b>2</b> Project shows little self-direction with minimal evidence of an idea-driven process or concept-based solutions. Below-average demonstration of research, original thought, and/or awareness of audience, resulting in a merely fair level of communication.</p>                                                                                      | <p><b>1</b> Project lacks self-direction or evidence of both an idea-driven process and concept-based solutions. Demonstrates almost no research, original thought, and/or awareness of audience, resulting in shallow to non-existent communication.</p>                                                     |
| Relevant Terms (Principles & Elements of Design & Typography) | <p><b>5</b> Student demonstrates a superb working understanding of the design elements and principle introduced with each project, as well as a sensitivity to typography as both a design element and tool of communication as required.</p>                 | <p><b>4</b> Student demonstrates a competent working understanding of the elements and principles, as well as some successful attempts to use typography as both a design element and tool of communication.</p>                                                                                     | <p><b>3</b> Student demonstrates an understanding of the elements and principles, but needs improvement. Typographic work exhibits some sensitivity, but also weakness in more than one area</p>                                                                                                                      | <p><b>2</b> Student demonstrates some understanding of the elements and principles, with a clear need for further study and practice. Typographic work, though exhibiting some potential, is weak in all areas.</p>                                                                                                                                              | <p><b>1</b> Student demonstrates little to no understanding of the elements and principles. Typographic sensitivity is practically non-existent.</p>                                                                                                                                                          |
| Craftsmanship & Technique                                     | <p><b>5</b> Work shows superior craftsmanship and command of technique — whether digital or traditional, and is executed with careful attention to detail. Materials and media are handled with skill while also enhancing design and concept.</p>            | <p><b>4</b> Work shows good craftsmanship and command of technique — whether digital or traditional, and is executed with attention to detail. Materials and media are handled with skill while, for the most part, enhancing design and concept.</p>                                                | <p><b>3</b> Work shows unpredictable craftsmanship and command of both digital and traditional technique, while attention to detail also needs improvement. Materials and media are handled inconsistently and do not always enhance design or concept.</p>                                                           | <p><b>2</b> Work shows hugely inconsistent craftsmanship and command of digital and traditional technique, and is executed with often poor attention to detail. Materials and media are handled weakly, while rarely enhancing design or concept.</p>                                                                                                            | <p><b>1</b> Work shows an almost complete lack of craftsmanship or command of either digital or traditional technique, and is executed with little to no attention to detail. Materials and media are handled very poorly, while doing nothing to enhance design or concept.</p>                              |
| Presentation                                                  | <p><b>5</b> Project is professionally presented with consideration for detail, impact, practicality, and communication. Student supplied final project files as specified. All required elements are present.</p>                                             | <p><b>4</b> Project is professionally presented but may adversely affect the work. Consideration has been given to most areas: detail, impact, practicality, and communication. Student supplied final project files as specified. All required elements are present.</p>                            | <p><b>3</b> Projects shows some evidence of an effort toward professional presentation, but needs improvement in one or more of these areas: detail, impact, practicality, and communication. Student supplied final project files as specified after faculty request and/or one required element may be missing.</p> | <p><b>2</b> Project shows little evidence of an effort toward professional presentation. Presentation may be inappropriate, and/or improvement is needed in the consideration all of these areas: detail, impact, and communication. Student supplied final project files, but did not meet specifications and/or more than one required element is missing.</p> | <p><b>1</b> Project is not professionally presented or planned. The display detracts significantly from the total presentation, and there is a lack of consideration given to detail, impact, and communication. Student did not supply final project files and/or several required elements are missing.</p> |

**Student Name:**

**Project Name:**

**Total Points:**

**Total Score:**

**Notes:**



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5969                              |
| Institution        | NMT                               |
| Applicant(s)       | heather.juarez@nmt.edu            |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-16 12:57 PM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

STEVE SIMPSON

### Chief Academic Officer Email

STEVE.SIMPSON@NMT.EDU

### Registrar Name

HEATHER JUAREZ

### Registrar Email

heather.juarez@nmt.edu

### Course's Academic Department

Communication, Liberal Arts, Social Sciences

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

HIST

### Number

1166

### Title

Technology and Science from the Hand-Ax to the Steam Engine: Full STEAM Ahead

### Number of credits

3

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

No

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

No

## Co-requisite Course

---

### Prefix

NA

---

### Number

NA

---

### Title

NA

## New Mexico Common Course Information

---

### Prefix

HIST

---

### Number

1160

---

### Title

Technology and Science from the Hand-Ax to the Steam Engine: Full STEAM Ahead

## A. Content Area and Essential Skills

---

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

Humanities

---

### Selected Areas

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

## Section B. Learning Outcomes

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

1. increasing students' understanding of the historical roots of modern science and technology. 2. helping students appreciate the contributions of different cultures to the development of science and technology. 3. enhancing students' ability to use historical data, narrative, visual images, and theory in making coherent arguments about the past. 4. helping students develop communication skills in both oral and written form, through class discussion and written assignments.

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

NA

## Section 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.

### Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.

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

This course employs various strategies for developing critical thinking. One starts with asking students to find a solution to a problem faced by a society in the past, given the level of knowledge and technical means existing in the society in question. For example, students are told that the ancient Chinese engineer Li Bing, while building a canal, cut a pass across mountains, well before any kinds of explosives were available. Students then are asked to propose their hypotheses of how he achieved this (the answer: he alternated heating rocks with bonfires and splashing cold water on them).

Another strategy is based on in-depth analysis of primary sources. Students read a primary source at home (evidence acquisition) and are asked source-specific questions, such as what information about twelfth-century European society, monastic culture and book-production technologies can be derived from the assigned chapters of the treatise *On Diverse Arts* by the German monk Theophilus. In class, students share their interpretations and observations (evidence evaluation) and collectively reconstruct the aspects of the twelfth-century culture and technology illuminated by the Theophilus (reasoning/conclusion). Each student picks one primary source for a short paper containing its historical analysis. Other strategies include essay assignments based on a synthesis of primary and secondary sources. In addition, there are several themes, followed throughout the semester, such as factors that hinder and advance scientific and technological developments, and students revisit these themes as they acquire new historical knowledge. For this class, students also have the option of creating a prototype of a premodern technology using information gathered from reputable secondary sources (evidence acquisition, evidence evaluation), and describe both the societal or engineering problem that led to its creation (problem setting) and how the technology solved the problem (reasoning and conclusion).



**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global** In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.

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

As a global survey of the cultures from all the inhabited continents, this course advances intercultural reasoning and intercultural competence by providing students with crucial information about contributions of diverse peoples and cultures to the global scientific and technological developments. Chronologically, most part of the course covers the period between the “Great Divergence” between “the West and the Rest,” a period when Western Europe was just one culture among others. To make students more familiar with this period and thus challenge the Eurocentric narrative of the history of science and technology has been a major rationale for developing this unique course. Students are encouraged to conduct research on nonWestern or indigenous technologies and to present on the cultural and social factors that led to their creation. Further, students are encouraged to build prototypes of nonWestern technologies and demonstrate them in class. For example, a group of students researched and built an atlatl, a lever-based arrow thrower. Students were not only expected to master the physics of the tool, but discuss the specific conditions that might have made it preferable to bows or spears

Sustainability, the interaction between the natural and human worlds, ethical reasoning, civic discourse, civic knowledge and engagement are the major aspects of this course, as many societal collapses caused by ecological reasons are discussed in depth, with particular attention paid to the interplay of natural and human-made factors. We go over the role of depletion of the cedar trees in the decline of Phoenicia, the role of deforestation and the resulting mudslides in the decline of the ancient African kingdom of Axum, the ecological catastrophes that destroyed the Khmer Empire and the Maya civilization, among others. In the last two cases, we explore in depth a combination of the deforestation and other forms of environmental degradation caused by the human economic activity and the naturally occurring climate change (the onset of the Medieval Warm Period and of the Little Ice Age, respectively).

---

**Information & Digital Literacy. Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry.** In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy.

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

The main activity, through which students learn to evaluate authority and value of information, and to understand information structure, is close reading and critical analysis of primary sources that begins with identifying the authorial position, perspective, and biases, as well as establishing connections between the content and form of document and the historical context, in which this document was produced. As part of this class, students are taken to the library and introduced to secondary source collection and evaluation techniques. They are introduced to different types of sources – from journal articles to books to archival materials – and taught methods for evaluating online resources (digital literacy). Digital literacy is developed through a critical analysis of the Internet websites providing (mis)information on the subjects related to pre-modern technology that are of interest to many NMT students, such as pyramid-building methods, invention of the catapult, and production of Damascus steel. Particularly with many premodern, indigenous tools, numerous websites exist that purport to describe the historical context of these technologies, though they vary widely in their credibility and accuracy. Students are taught, for example, to track down and verify the sources used in such websites, or to look up the background, training, or affiliation of the website creator. Needless to say, this activity also teaches students to distinguish between primary and secondary sources and between factual information and opinion.

Students are engaged with research as inquiry while interrogating and synthesizing primary and secondary

sources. The group of students presenting on the atlatl, for example, started with central questions (such as, what were the advantages or disadvantages of the atlatl over other types of hunting tools), which drove their inquiry into secondary sources about both the history of indigenous groups that used the atlatl and the construction and physics of the tool

## Section D. Assessment Plan

---

[Link to Institution's General Education Assessment Plan](https://www.nmt.edu/academicaffairs/assessment/gened.php)

<https://www.nmt.edu/academicaffairs/assessment/gened.php>

# Application History

| Type          | username               | Text                                                                | Timestamp                          |
|---------------|------------------------|---------------------------------------------------------------------|------------------------------------|
| Submittal     | heather.juarez@nmt.edu | Submitted by heather.juarez@nmt.edu                                 | 2026-02-16 12:57 PM (US /Mountain) |
| Authorization | heather.juarez@nmt.edu | heather.juarez@nmt.edu has authorized the application for submittal | 2026-02-16 12:56 PM (US /Mountain) |
| Created       | heather.juarez@nmt.edu | Application started by heather.juarez@nmt.edu                       | 2026-02-16 12:14 PM (US /Mountain) |

**Do not use any print or online sources that are not on the course website.**

Choose ONE from the following topics and write an essay that:

- has a clear thesis and logical organization
- uses grammatically correct sentences and formal, academic-style language
- contains 5-10 specific references to the readings that has been assigned and/or discussed in class this semester
- contains at least 3 references to primary sources
- has properly formatted citations indicating sources of all direct AND indirect quotations except lectures (that is, if your information comes from my lectures, you do NOT have to indicate it)
- is 3-4 pages long
- is typed and double-spaced
- has one-inch margins
- is in Times New Roman 12-point type

The steam engine: a very long history.

Describe the historical developments in natural philosophy, science, technology, and religion that contributed to the invention of the steam engine. Begin with the ancient world.

2. Technology, society, and ecology.

Discuss interactions between the natural environment, historical development in general, and the development of technology and the study of nature. Use examples from at least three different regions/societies.

3. Science and religion.

Discuss the impact of religion on the study of nature and the development of science. Use examples from at least five different regions/societies.

4. Science and technology in the pre-modern world: A regional history.

- The Nile Valley and the Near East in Antiquity (Egypt, Nubia, Mesopotamia, Hellenistic kingdoms; ca. 5500 BCE – ca. 500s CE)
- Ancient Mediterranean (Egypt, Greece, Hellenistic kingdoms, Rome; ca. 3500 BCE – ca. 500s CE)
- Medieval Christian world (Europe outside of Al-Andalus and steppe/tundra zones, Armenia, early medieval Nubia, Ethiopia; ca. 500s CE – ca. 1500 CE)
- Renaissance Europe (ca. 1350 – ca. 1650)
- Medieval Islamic World (see Map 2; ca 600s CE – ca 1500 CE)
- China
- Asia outside of China
- The Americas

Do NOT use ChatGPT in any way while writing this paper.

After I read your paper, I may ask you to explain some aspects of it, such as your word choice or reasoning behind a particular argument. If you are not able to explain your reasoning, your paper will receive an F.

General Education Essential Skills: Critical Thinking (Problem setting, Evidence Acquisition, Evidence Evaluation, Reasoning/Conclusion); Information & Digital Literacy



# General Education Request Application

|                    |                                   |
|--------------------|-----------------------------------|
| Application Number | 5963                              |
| Institution        | NNMC                              |
| Applicant(s)       | lorig@nnmc.edu                    |
| Status             | NMHED_REVIEW                      |
| Submitted          | 2026-02-15 07:59 AM (US/Mountain) |

# Gened Request Form

## Contact Information

### Chief Academic Officer Name

René Vellanoweth

### Chief Academic Officer Email

rene.vellanoweth@nnmc.edu

### Registrar Name

Janice Baca

### Registrar Email

janice.baca@nnmc.edu

### Course's Academic Department

Language and Letters

### Is this a Application a Re-Submission

no

## Institutional Course Information

### Prefix

ENGL

### Number

2550

### Title

Introduction to Southwest Literature

### Number of credits

3

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

No

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

No

## Co-requisite Course

---

### Prefix

N/A

---

### Number

N/A

---

### Title

N/A

## New Mexico Common Course Information

---

### Prefix

ENGL

---

### Number

2550

---

### Title

Introduction to Southwest Literature

## A. Content Area and Essential Skills

---

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

Humanities

---

### Selected Areas

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

## Section B. Learning Outcomes

---

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

1. Analyze representative texts from the American Southwest literary canon.
2. Identify literary elements and common themes.
3. Examine the historical and cultural forces that have influenced the writings of Southwest authors.

---

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

N/A



## Section 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.

**Critical Thinking. Problem Setting; Evidence Acquisition; Evidence Evaluation; and Reasoning /Conclusion. In this box, provide a narrative that explains how the proposed course addresses all of the components of critical thinking.**

**Problem Setting:** This course is organized around exploring the novels, poetry, drama, and creative nonfiction that arise from the Southwest's unique cultural, historical, and ecological context. As students develop the knowledge and vocabulary to identify a variety of literary elements and techniques, they also learn to consider the ways these techniques combine to influence meaning, and the ways they interact with content to shape the perceptions and experiences of readers. **Evidence Acquisition:** In this course, students are prompted to read assigned literary texts "like detectives," learning to note the subtle craft choices that authors make and how these impact readers, and looking up unfamiliar words, allusions, historical context, and ecological facts. This allows the literary works to become portals through which students broaden their knowledge and understanding of diverse aspects of the region and draw connections to their other interests and existing skills and experience. **Evidence Evaluation:** After being prompted to make notes while reading outside of class, students work in groups during class time to collaboratively answer questions that are designed to deepen their understanding and interpretations of texts. In weekly written responses to readings, students are also encouraged to consider drawing upon their own experiences and personal histories, as well as literature and stories in other forms that they have previous knowledge of, to help them conceptualize and articulate arguments about texts read in class. **Reasoning/Conclusion:** As they answer and discuss prompts about weekly readings, students learn to formulate theses about the works we read in class and how they impact readers. At the end of the semester, students use one of these arguments to inspire a creative piece of their own, in a medium of their choice—with options that include creative writing, visual art, or formal reading or performance. They also write accompanying reflections that clearly relate their work and artistic choices to those they observed in the literary text that inspired their argument.

**Personal & Social Responsibility. Intercultural reasoning and intercultural competence; Sustainability and the natural and human worlds; Ethical reasoning; Collaboration skills, teamwork and value systems; and Civic discourse, civic knowledge and engagement – local and global In this box, provide a narrative that explains how the proposed course addresses 2 of the components of personal & social responsibility.**

**Intercultural reasoning and intercultural competence:** Reading diverse literature presents opportunities for students to find literary voices with whom they identify, as well as opportunities for students to understand and empathize with those unlike themselves. The Southwest region is marked both by its long history of intersecting cultures and by the presence of the modern Mexico-United States border. These realities shape the region's literary voices, as well as the identities of its literary characters and of its authors. Throughout this class, students are prompted to read and discuss literature considering this context—acknowledging the opportunities it creates for beauty and richness, alongside its complexities and legacies of violence.

**Sustainability and the natural and human worlds:** Much of the literature of the Southwest is rooted in its rural landscapes and is inextricably interwoven with imagery of the region's animals, plants, weather patterns, landforms and geological features. Many works by the region's Native authors are rooted in relationships between people and place that extend back for millennia, while much of the region's creative nonfiction falls in the genres of nature or science writing, and deals both with the beauty of its landscapes and with the specific environmental challenges it faces. In this class, students read works that span this range, including those that engage with interactions between humans and the natural world in areas immediately surrounding Española. **Ethical reasoning:** Through discussions in this course, students consider the themes

that they see emerging from the texts we read, including those that intersect with moral issues they feel are important. They have the opportunity to develop arguments around why those themes are present, how they are conveyed, and what impacts they might have on readers. Collaboration skills, teamwork and value systems: During class periods, students collaborate during small group discussions and in-class writing projects designed to strengthen their analysis of the literature we read and to illustrate the importance of engaging with other perspectives in order to challenge and deepen our own. Students also engage in peer review discussions during the developmental stages of their midterm and final projects, to practice giving constructive feedback and being receptive to others' ideas. Civic discourse, civic knowledge and engagement – local and global: By increasing students' knowledge and understanding of the cultural, historical, and environmental influences shaping the Southwest region, and how they connect to the larger world, the readings in this course contribute to their ability to think and act as informed and conscientious citizens. Through readings and discussions, students also practice their ability to engage with a diverse range of ideas and perspectives in productive and informed ways.

---

**Information & Digital Literacy. Authority and Value of Information; Digital Literacy; Information Structure; and Research as Inquiry. In this box, provide a narrative that explains how the proposed course addresses 3 of the components of digital literacy.**

Authority and Value of Information: As students evaluate the texts we read in class and take positions on relevant issues, they draw on their own experiences, as well as researched information, to evaluate the sources they are using to supplement their literary analysis. While completing their weekly assignments, they are always prompted to look up unfamiliar words and concepts, and to discuss the ways that the authority and value of different sources may differ depending on the information sought. For example, an author's personal website may be a perfectly legitimate source to use for biographical information on that author, such as educational background and publication dates, but sources of information on controversial issues need to be evaluated carefully and may need to be verified by peer-reviewed sources, before they are used in an essay. We also discuss the specific opportunities, challenges and current limitations inherent to using AI tools in research. Digital Literacy: While completing this research, students develop their ability to navigate digital library resources, such as the "Opposing Viewpoints" database. They also become familiar with various digital resources in the literary field, such as the Library of America's video series and the critical and biographical information available through the Poetry Foundation. In addition, collaborative digital tools for brainstorming and collecting information, such as Padlet, are incorporated into Zoom classes. Information Structure and Research as Inquiry: The course is organized into weekly learning modules that each cohere around a theme or a literary element that distinguishes Southwest literature, beginning with broad background and history and an introduction to the literary genres, and becoming more focused throughout the semester, both in relation to literary forms and to content. As the modules progress and students begin work on their midterm essays and final projects, they can draw on readings and research done throughout the semester to inform their central ideas and arguments. While writing their midterm and final projects, students are encouraged to refrain from finalizing their arguments, or theses, until they have a first draft of their essays, to ensure that they are allowing careful reading and research to form their opinions, rather than allowing opinions to drive their research.

---

## Section D. Assessment Plan

---

### [Link to Institution's General Education Assessment Plan](https://nnmc.libguides.com/c.php?g=996187&p=7209282)

<https://nnmc.libguides.com/c.php?g=996187&p=7209282>

# Application History

| Type          | username       | Text                                                        | Timestamp                          |
|---------------|----------------|-------------------------------------------------------------|------------------------------------|
| Submittal     | lorig@nnmc.edu | Submitted by lorig@nnmc.edu                                 | 2026-02-15 07:59 AM (US /Mountain) |
| Authorization | lorig@nnmc.edu | lorig@nnmc.edu has authorized the application for submittal | 2026-02-15 07:59 AM (US /Mountain) |
| Created       | lorig@nnmc.edu | Application started by lorig@nnmc.edu                       | 2026-02-15 07:52 AM (US /Mountain) |

## Introduction to Southwest Literature Final Project

For the midterm, we practiced analyzing and interpreting a text by writing a classic scholarly essay. For the final, you will begin with similar analysis, forming a thesis about one of the stories, poems, or essays we have read for class. But you will have the option to make your argument in a creative way—allowing you to join the creative *and* critical conversations around literature in the Southwest.

### Instructions:

1. **Choose one of the texts we read for class that you would like to analyze for your final project.** (You may also opt to compare and contrast two texts.)
2. **Form a thesis, or claim,** about it, using the same steps we practiced for the Midterm Essay. Your thesis should be centered around exploring a choice the author/s made in relation to form and/or content, and it should make an argument explaining the effect this choice has on readers.
3. **Choose what format you are going to use for the creative portion of your project** (see suggested options below) and submit the **Final Project Proposal**. This should be formatted in MLA style and include:
  - a. An introductory, or thesis, paragraph (this will look similar to the thesis paragraph you wrote for the midterm essay).
  - b. A paragraph with at least one example or piece of evidence from the text you are analyzing that supports your thesis.
  - c. A description of which creative option you chose and why this choice reflects your thesis and relates logically to the source material.

### After receiving feedback on your Final Project Proposal, submit the following to Canvas:

1. **Your creative project**, completed to the best of your ability and incorporating feedback received from your instructor and from your peers during the Project Proposal Workshop.
2. **A 1-2 page reflection that answers the following questions:**
  - a. How do the specific stylistic choices that you made in your project reflect your ideas about the story/poem/essay you chose to work with? (These should include some big things, like the overall format, and some small things, like specific color and wording choices.)
  - b. As you completed your project, did everything work out as planned? Looking back, would you have made any different choices?
  - c. Is there anything else you think I should know as a reader/viewer/listener? Think of this as an opportunity to write a brief “artist’s statement” that provides helpful additional context and information.
3. **Come to the final class prepared to present your project to the group** (we’ll discuss what this should look like depending on the medium you chose to work in).

## Project Format Ideas

Here you will find a list of project formats you might choose from. Keep in mind that you don't have a lot of time to complete this assignment, so make sure that you select one you can complete before the due date without too much stress. Feel free to propose another format if you have one in mind that I haven't mentioned!

### Written Options:

- Standard literature essay (1000-1200 words)
- A rewrite of the end of a story (min 600 words)
- An imitation of one of the poems we read, using your own experiences and all in your own words
- A braided essay (see examples) that "braids" your own personal experiences with your thoughts about the piece you are writing on (min 700 words)
- A prequel or sequel to a story, or a passage to fill in a missing part in the middle of a narrative (min 600 words)
- A character's firsthand experiences in diary/journal form (min 600 words)
- A mini screenplay or play/opera adaption of a narrative (min 600 words)

### Digital Art Options:

- A short podcast essay
- A short video essay
- A photo or digital art essay with captions
- An interactive poster or infographic

### Music and Visual Art Options:

- A drawing or painting of a specific passage or setting from a text
- A mini comic book or zine about the text
- Portraits of characters (1 really detailed one, or a series of 2-3 related portraits)
- A sculpture or collage that reflects your thoughts about the text
- A song that you wrote and recorded about the text
- A recorded dramatic performance of a poem or passage from a story (if you have drama experience, this can be fun)

| Final Project Grading Rubric                                                                                          | Excellent | Good | Ok  | Poor | Missing |
|-----------------------------------------------------------------------------------------------------------------------|-----------|------|-----|------|---------|
| <b>Proposal</b>                                                                                                       |           |      |     |      |         |
| Contains a thesis, or argument, that engages thoughtfully with the text/s read in class                               | 15        | 12   | 7-8 | 3    | 0       |
| Contains evidence from the text that clearly supports that argument                                                   | 15        | 12   | 7-8 | 3    | 0       |
| Contains a clearly-articulated proposal for the creative project that displays the author's voice and thought process | 10        | 8    | 5   | 2    | 0       |

| Creative Project                                                                                                                       |    |    |    |   |   |
|----------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---|---|
| Completeness and execution of proposed plan                                                                                            | 20 | 16 | 10 | 4 | 0 |
| Reflection of original thesis and source material                                                                                      | 10 | 8  | 5  | 2 | 0 |
| Reflection                                                                                                                             |    |    |    |   |   |
| Thoughtfulness and engagement with prompt                                                                                              | 10 | 8  | 5  | 2 | 0 |
| Originality of voice and ideas                                                                                                         | 10 | 8  | 5  | 2 | 0 |
| Overall                                                                                                                                |    |    |    |   |   |
| Polished and effective final product with attention to presentation and MLA formatting, editing, and relationship between all elements | 10 | 8  | 5  | 2 | 0 |

**Keep in mind:** creative projects don't always go exactly as planned. You can have a great idea that just doesn't come together as you had hoped (although sometimes "mistakes" turn out great). For this reason, effort will matter a lot in this assignment. If you faced challenges and put in effort that I might not see in your final project, write about it in your reflection!