NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	3805
Institution	MCC
Applicant(s)	michaelb@mesalands.edu
Status	NMHED_REVIEW
Submitted	2025-03-24 08:17 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Joel Kiser

Chief Academic Officer Email
joelk@mesalands.edu

Registrar Name
Brian Bailey

Registrar Email
brianb@mesalands.edu

Course's Academic Department
Academic Affairs

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
GEOL

Number
1110

Title
Physical Geology

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
None

Number
none

Title
none

New Mexico Common Course Information

Prefix
GEOL

Number
1110C

Title
Physical Geology 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.

student Learning Outcomes (Lecture)
1. Recall, describe or explain geologic vocabulary.
2. Identify or explain aspects of the geologic time scale and compare the uses and limitations of relative and absolute dating.
3. Recognize or explain the evidence used to support the theory of plate tectonics. Describe or identify how plate tectonics is related to the structure and features of the Earth.
4. Describe the formation of, and describe, compare, and classify minerals.
5. Identify or describe the three main rock types, how each forms in the context of the rock cycle and what each indicates about its environment of formation.
6. Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.
7. Describe or discuss the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
8. Recognize or describe the geologic processes involved in the formation and concentration of geologic resources.
Student Learning Outcomes (Lab)
1. Use physical properties to identify mineral specimens.
2. Describe, classify, and identify igneous, sedimentary, and metamorphic rocks and their textures.
3. Utilize the principles of stratigraphy to provide an explanation of the geologic history portrayed in a photograph or cross-section.
4. Explain how contour lines are used to represent topography, use map scales to measure distances on the ground, and construct topographic profiles.
5. Identify landforms from images and topographic maps.
6. Interpret geologic maps and construct geologic cross-sections.
7. Acquire and communicate scientific data, ideas, and interpretations through written, oral, or visual means. Examples may include creating and describing graphs, maps and photos.
8. Apply critical thinking skills such as inductive, deductive, and mathematical reasoning to solve geological problems.

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

none

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.

GEOL 1110C fosters critical thinking through investigations of Earth's history, hazards, and systems. Students identify geologic problems such as causes of earthquakes or impacts of mining, then define these problems in scientific terms appropriate to the geologic context. Students acquire evidence from rock and mineral samples, maps, and geophysical data, as well as published research. They assess the credibility and relevance of data, identifying limitations in interpretation or scale. Students draw informed conclusions by applying deductive and inductive reasoning to geologic patterns and spatial data. For example, when constructing a geologic cross-section, students interpret layers and structures based on observations and stratigraphic rules. They connect evidence to process, drawing conclusions about Earth's evolution, hazards, or resource availability.

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.

Students in GEOL 1110C communicate quantitative geologic data using graphs, cross-sections, and topographic profiles. In both lecture and lab, students learn to represent quantitative relationships through maps, visualizations, and written descriptions, applying terms and symbols correctly. Students evaluate arguments based on data such as radiometric age dating, stream discharge measurements, and slope gradients. They analyze sources of error, assess the accuracy of maps and models, and use quantitative reasoning to draw conclusions about Earth's systems. Quantitative models—including the rock cycle, isostasy, and mass wasting prediction models—are applied to real-world problems like groundwater flow, resource mapping, or predicting the risk of geologic hazards. Students practice converting measurements, calculating rates, and interpreting trends in earth processes over time.

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.

GEOL 1110C challenges students to engage with global and local geologic issues from diverse cultural and ethical perspectives. Through case studies, students examine natural disasters, water scarcity, and climate change, reflecting on how different communities perceive and respond to geologic risks. Students explore the sustainability of resource extraction, urban development, and land-use policies. They analyze how environmental, political, and economic systems interact with natural geologic systems and propose science-based, sustainable solutions. Ethical reasoning is integrated into lab and lecture when evaluating the consequences of human activity on geologic systems (e.g., hydraulic fracturing, dam construction, mining practices). Students must consider who benefits, who is harmed, and what responsibilities scientists and citizens share. The course emphasizes collaboration through group lab work, mapping exercises, and team-based presentations. Students practice respectful dialogue, peer review, and accountability in group settings. Civic engagement is encouraged through assignments that require students to explore and communicate local geologic issues—such as flood risk, fault zones, or aquifer decline—using both technical and public-facing formats.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

https://www.mesalands.edu/academic-programs/assessment/

Application History

Type	username	Text	Timestamp
Submittal	michaelb@mesalands.edu	Submitted by michaelb@mesalands.edu	2025-03-24 08:17 PM (US/Mountain)
Authorization	michaelb@mesalands.edu	michaelb@mesalands.edu has authorized the application for submittal	2025-03-24 08:17 PM (US/Mountain)
Created	michaelb@mesalands.edu	Application started by michaelb@mesalands.edu	2025-03-24 07:44 PM (US/Mountain)

Assignment: Build a Geologic History – From Rocks to Stories
Course: GEOL 1110C – Physical Geology
General Education Area: III – Laboratory Science
Essential Skills: Quantitative Reasoning, Critical Thinking, Personal & Social Responsibility

Assignment Overview
This hands-on, investigative assignment allows students to reconstruct the geologic history of a fictional or modeled landscape using a set of rock layers, fossils, and cross-sectional drawings. Students will apply concepts from Chapter 5: Stratigraphy, including Walther's Law, stratigraphic columns, and sedimentary environments. The assignment emphasizes observation, visualization, and scientific reasoning.
Step-by-Step Instructions

1. Stratigraphic Column Creation (Hands-On) – Simulate core sampling using Play-Doh. Create up to 10 thin layers of different colors to represent sediment. Add sand or other material for realism. Cut and remove a cylindrical 'core.' Measure the total length and thickness of each layer. Record your data in Table 5.1.
2. Construct a Stratigraphic Column – Use your measurements to build a labeled stratigraphic column. Color and label each layer by thickness and position (oldest at the bottom).
3. Calculate Sedimentation Rate – Assume the bottom of the core is 100,000 years old. Use your total depth to calculate sedimentation rate in mm/year.
4. Interpret Stratigraphy – Identify possible depositional environments and relate them to tectonic or sea-level changes. Apply Walther's Law to identify signs of transgression or regression.
5. Geologic History Narrative – Write a 1–2 page narrative of the geologic history, using your core and cross-section as a guide. Incorporate vocabulary such as unconformity, facies, uplift, and fault.
6. Reflection – Reflect on the importance of stratigraphy and geologic cores in understanding Earth systems, hazards, or resources. What might this record tell us about climate or sea-level change?

Format Requirements

- Narrative: 1–2 typed pages, double-spaced
- Visual: Stratigraphic column (hand-drawn or digital) with measurements and labels
- Include calculations, Table 5.1, and labeled diagrams
- Cite Chapter 5 and any additional references in APA style

Learning Objectives

- Reconstruct past geologic events using stratigraphic evidence.
- Apply Walther's Law and other stratigraphic principles.
- Interpret sediment thickness to infer depositional processes.
- Create and analyze stratigraphic columns with geologic reasoning.
- Communicate findings in narrative and visual formats.
- Reflect on the societal relevance of geologic records and sedimentary history.

Sediment Coring and Stratigraphic Columns

This exercise is an analogy for how geologists recover sediment cores. Instead of sediment, though, we will use Play-Doh.

1. Using an empty Play-Doh container (or another container), place thin layers of different colored Play-Doh inside; don't use more than 10 layers. These layers of Play-Doh will act as our layers of sediment. Try to vary the thickness of the layers. You can also place sand in between layers.
2. Take a knife or other tool and cut a circle through the layers of Play-Doh. This represents geologists drilling into layers of sediment.
3. Extract the cylinder of Play-Doh layers from the container. You should see all your layers of "sediment" represented. This is what geologists recover when collecting a sediment core from the sea floor or lake bottom.

Depending on the type of coring that is done, geologists will split the sediment core in half. One-half of the core will be sampled and studied by geologists, while the other half will be archived and untouched. One of the first things geologists do on a recovered core is to describe the lithology. You are going to create a stratigraphic column of your Play-Doh core. A stratigraphic column is a graphical representation of layers of sediment and sedimentary rock and their characteristics. The bottom of a stratigraphic column is always the oldest rock unit in the area.

a. Measure and record the total length of your Play-Doh core in millimeters.
   _____
b. Measure and record the thickness of each layer in your Play-Doh core in Table 5.1. Start with the uppermost layer.

Table 5.1 – Play-Doh "sediment" layer characteristics

Layer Color	Thickness (mm)

c. Now let's visualize this data by creating a stratigraphic column using Figure 5.3. Start with your uppermost layer, use its thickness to fill in the "Lithology" column. For example, if you measured

a thickness of 15 mm, draw a horizontal line at the 15 mm mark. Color your layer so that it matches your Play-Doh. This will be your first layer.

d. Now add the second layer to the column. If your second layer is 10 mm, start where the first layer ended and then measure 10 mm down from there. Finish the stratigraphic column with all of your layers.

e. If the sediment at the bottom of your column was deposited 100,000 years ago, what is the sedimentation rate of your core in mm/yr? _____

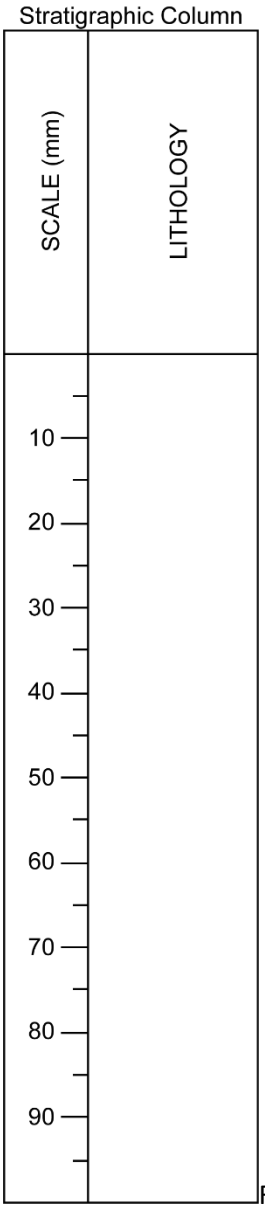


Figure 5.3 – A blank stratigraphic column for Exercise 5.1.

Rubric: Build a Geologic History – Stratigraphy Assignment
Course: GEOL 1110C – Physical Geology
General Education Area: III – Laboratory Science
Essential Skills: Quantitative Reasoning, Critical Thinking, Personal & Social Responsibility
Assignment Rubric

Criteria (Essential Skill)	Exceeds Expectations (4)	Meets Expectations (3)	Approaching Expectations (2)	Below Expectations (1)
Stratigraphic Column Creation (Quantitative Reasoning)	Column includes all layers, correct thicknesses, and detailed labeling with colors and measurement units.	Column is mostly complete with accurate thicknesses and general labels.	Column has missing or mislabeled layers or lacks precision.	Column is incomplete or missing.
Sedimentation Rate Calculation (Quantitative Reasoning)	Accurate and clearly explained sedimentation rate calculation.	Calculation is correct with some explanation.	Calculation attempted but incorrect or poorly explained.	No calculation or major errors without explanation.
Geologic Interpretation & Timeline (Critical Thinking)	Narrative shows deep understanding of stratigraphy with logical sequence and accurate use of principles.	Narrative correctly applies basic stratigraphic principles with few errors.	Narrative includes basic ideas but lacks clarity or has significant errors.	Narrative is missing or inaccurate.
Use of Stratigraphy Concepts (Critical Thinking)	Effectively applies Walther's Law, depositional environments, and terminology throughout the project.	Uses stratigraphic concepts with reasonable accuracy.	Mentions concepts but lacks application or accuracy.	Little to no application of stratigraphic concepts.
Reflection (Personal & Social Responsibility)	Insightful and relevant reflection on the societal value of geologic history.	General reflection connects project to broader importance.	Limited or vague reflection.	No reflection or unrelated to topic.
Presentation & Communication (Personal & Social Responsibility)	Clear, professional writing and visuals; highly organized and visually engaging.	Adequate clarity and organization; visuals present.	Basic organization with limited clarity; visuals incomplete.	Disorganized or unclear; visuals missing or poorly done.

Grading Notes

Total Score: ____ / 24 points

Suggested Grade Scale:

- 22–24 = A
- 19–21 = B
- 16–18 = C
- 13–15 = D
- <13 = F

Assignment: Build a Geologic History – From Rocks to Stories
Course: GEOL 1110C – Physical Geology
General Education Area: III – Laboratory Science
Essential Skills: Quantitative Reasoning, Critical Thinking, Personal & Social Responsibility

Assignment Overview
This hands-on, investigative assignment allows students to reconstruct the geologic history of a fictional or modeled landscape using a set of rock layers, fossils, and cross-sectional drawings. Students will apply concepts from Chapter 5: Stratigraphy, including Walther's Law, stratigraphic columns, and sedimentary environments. The assignment emphasizes observation, visualization, and scientific reasoning.
Step-by-Step Instructions

1. Stratigraphic Column Creation (Hands-On) – Simulate core sampling using Play-Doh. Create up to 10 thin layers of different colors to represent sediment. Add sand or other material for realism. Cut and remove a cylindrical 'core.' Measure the total length and thickness of each layer. Record your data in Table 5.1.
2. Construct a Stratigraphic Column – Use your measurements to build a labeled stratigraphic column. Color and label each layer by thickness and position (oldest at the bottom).
3. Calculate Sedimentation Rate – Assume the bottom of the core is 100,000 years old. Use your total depth to calculate sedimentation rate in mm/year.
4. Interpret Stratigraphy – Identify possible depositional environments and relate them to tectonic or sea-level changes. Apply Walther's Law to identify signs of transgression or regression.
5. Geologic History Narrative – Write a 1–2 page narrative of the geologic history, using your core and cross-section as a guide. Incorporate vocabulary such as unconformity, facies, uplift, and fault.
6. Reflection – Reflect on the importance of stratigraphy and geologic cores in understanding Earth systems, hazards, or resources. What might this record tell us about climate or sea-level change?

Format Requirements

- Narrative: 1–2 typed pages, double-spaced
- Visual: Stratigraphic column (hand-drawn or digital) with measurements and labels
- Include calculations, Table 5.1, and labeled diagrams
- Cite Chapter 5 and any additional references in APA style

Learning Objectives

- Reconstruct past geologic events using stratigraphic evidence.
- Apply Walther's Law and other stratigraphic principles.
- Interpret sediment thickness to infer depositional processes.
- Create and analyze stratigraphic columns with geologic reasoning.
- Communicate findings in narrative and visual formats.
- Reflect on the societal relevance of geologic records and sedimentary history.

Sediment Coring and Stratigraphic Columns

This exercise is an analogy for how geologists recover sediment cores. Instead of sediment, though, we will use Play-Doh.

1. Using an empty Play-Doh container (or another container), place thin layers of different colored Play-Doh inside; don't use more than 10 layers. These layers of Play-Doh will act as our layers of sediment. Try to vary the thickness of the layers. You can also place sand in between layers.
2. Take a knife or other tool and cut a circle through the layers of Play-Doh. This represents geologists drilling into layers of sediment.
3. Extract the cylinder of Play-Doh layers from the container. You should see all your layers of "sediment" represented. This is what geologists recover when collecting a sediment core from the sea floor or lake bottom.

Depending on the type of coring that is done, geologists will split the sediment core in half. One-half of the core will be sampled and studied by geologists, while the other half will be archived and untouched. One of the first things geologists do on a recovered core is to describe the lithology. You are going to create a stratigraphic column of your Play-Doh core. A stratigraphic column is a graphical representation of layers of sediment and sedimentary rock and their characteristics. The bottom of a stratigraphic column is always the oldest rock unit in the area.

a. Measure and record the total length of your Play-Doh core in millimeters.
   _____
b. Measure and record the thickness of each layer in your Play-Doh core in Table 5.1. Start with the uppermost layer.

Table 5.1 – Play-Doh "sediment" layer characteristics

Layer Color	Thickness (mm)

c. Now let's visualize this data by creating a stratigraphic column using Figure 5.3. Start with your uppermost layer, use its thickness to fill in the "Lithology" column. For example, if you measured

a thickness of 15 mm, draw a horizontal line at the 15 mm mark. Color your layer so that it matches your Play-Doh. This will be your first layer.

d. Now add the second layer to the column. If your second layer is 10 mm, start where the first layer ended and then measure 10 mm down from there. Finish the stratigraphic column with all of your layers.

e. If the sediment at the bottom of your column was deposited 100,000 years ago, what is the sedimentation rate of your core in mm/yr? _____

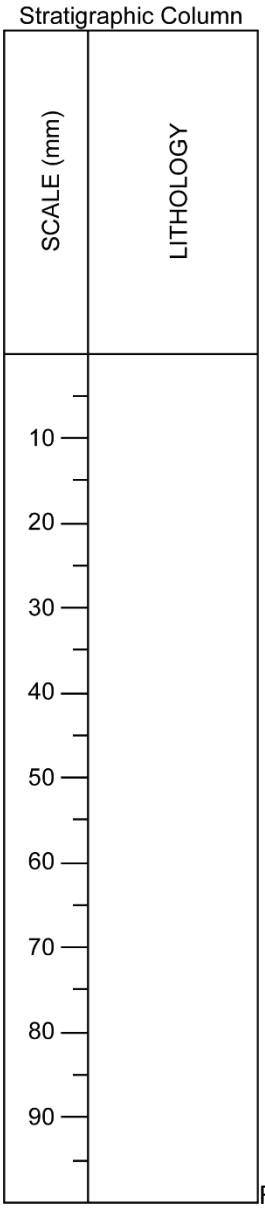


Figure 5.3 – A blank stratigraphic column for Exercise 5.1.

Rubric: Build a Geologic History – Stratigraphy Assignment
Course: GEOL 1110C – Physical Geology
General Education Area: III – Laboratory Science
Essential Skills: Quantitative Reasoning, Critical Thinking, Personal & Social Responsibility
Assignment Rubric

Criteria (Essential Skill)	Exceeds Expectations (4)	Meets Expectations (3)	Approaching Expectations (2)	Below Expectations (1)
Stratigraphic Column Creation (Quantitative Reasoning)	Column includes all layers, correct thicknesses, and detailed labeling with colors and measurement units.	Column is mostly complete with accurate thicknesses and general labels.	Column has missing or mislabeled layers or lacks precision.	Column is incomplete or missing.
Sedimentation Rate Calculation (Quantitative Reasoning)	Accurate and clearly explained sedimentation rate calculation.	Calculation is correct with some explanation.	Calculation attempted but incorrect or poorly explained.	No calculation or major errors without explanation.
Geologic Interpretation & Timeline (Critical Thinking)	Narrative shows deep understanding of stratigraphy with logical sequence and accurate use of principles.	Narrative correctly applies basic stratigraphic principles with few errors.	Narrative includes basic ideas but lacks clarity or has significant errors.	Narrative is missing or inaccurate.
Use of Stratigraphy Concepts (Critical Thinking)	Effectively applies Walther's Law, depositional environments, and terminology throughout the project.	Uses stratigraphic concepts with reasonable accuracy.	Mentions concepts but lacks application or accuracy.	Little to no application of stratigraphic concepts.
Reflection (Personal & Social Responsibility)	Insightful and relevant reflection on the societal value of geologic history.	General reflection connects project to broader importance.	Limited or vague reflection.	No reflection or unrelated to topic.
Presentation & Communication (Personal & Social Responsibility)	Clear, professional writing and visuals; highly organized and visually engaging.	Adequate clarity and organization; visuals present.	Basic organization with limited clarity; visuals incomplete.	Disorganized or unclear; visuals missing or poorly done.

Grading Notes

Total Score: ____ / 24 points

Suggested Grade Scale:

- 22–24 = A
- 19–21 = B
- 16–18 = C
- 13–15 = D
- <13 = F

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	3826
Institution	NMT
Applicant(s)	alexandria.armendariz@nmt.edu
Status	NMHED_REVIEW
Submitted	2025-03-26 12:18 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Steve Simpson

Chief Academic Officer Email
Steve.simpson@nmt.edu

Registrar Name
Alexandria Armendariz

Registrar Email
alexandria.armendariz@nmt.edu

Course's Academic Department
Communication, Liberal Arts, Social Sciences

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
PHYS

Number
1996

Title
Special Topics in Physics

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
PHYS

Number
1996

Title
Special Topics in Physics

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
This is a special topics course with rotating topics. The outcomes vary based on the topic

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
This course provides foundational skills in physics to solve problems. Skills are introduced and practiced in lectures and homework assignments, then students identify a specific problem to apply these skills to. One version of the Special Topics Course is "Climate and Atmospheric Physics." Students choose a topic area in which they gather and evaluate data based on skills from lecture and lab. They produce a poster or some other presentation format where they can discuss their problem, reasoning, and conclusions about the problem.

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

Quantitative Reasoning:
The lecture and lab work in tandem with one another in terms of content and project designs. Students collect and analyze data in labs, and often use this data as part of their research project that is introduced in the lecture. Students who do not enroll in the lab receive additional guidance related to data collection and analysis. The data and analysis are carefully related to physical models. In the context of Climate and Atmospheric Physics, the students relate data to models of general atmospheric circulation and energy flow in the atmosphere.

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
This course is very well-suited for increasing awareness of personal and social responsibility since it provides a physics foundation in special topics related to everyday life. For example, Climate and Atmospheric Physics emphasizes the foundational physics principles with a focus on energy to understand weather and climate, including the ways in which the basic state of the atmosphere is influenced by anthropogenic and non-anthropogenic sources. Increasing the understanding of the underlying physics and how it influences changes in our environment leads to more informed personal choices and awareness of social responsibility. The course also requires collaboration, as students work in groups – particular in the labs – to solve problems.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

https://www.nmt.edu/academicaffairs/assessment/gened.php

Application History

Type	username	Text	Timestamp
Submittal	alexandria.armendariz@nmt.edu	Submitted by alexandria.armendariz@nmt.edu	2025-03-26 12:18 PM (US/Mountain)
Authorization	alexandria.armendariz@nmt.edu	alexandria.armendariz@nmt.edu has authorized the application for submittal	2025-03-26 12:18 PM (US/Mountain)
Created	alexandria.armendariz@nmt.edu	Application started by alexandria.armendariz@nmt.edu	2025-03-26 10:39 AM (US/Mountain)

Climate & Atmospheric Physics

PHYS 1996 Spring 2024

Problem Assignment # 3

---

1. Obliquity
   (a) What is obliquity?
   (b) What is the most important factor in determining the seasons?
   (c) Draw the sun and earth in a side view plane of the orbit. Draw Earth's axis of rotation relative to the sun for a northern hemisphere winter.
   (d) Repeat part (c) for northern hemisphere summer.
   (e) Repeat part (c) for the equinox.
   (f) What is the significance of the tropics of cancer and capricorn?
   (g) What is the significance of the artic and antarctic circles?
   (h) Presently, Earth's axis is tilted at 23.5°. What would the latitude of the tropic of cancer be if the tilt was 50°? What would the latitude of the artic circle be in this case?

2. Albedo
   (a) What is the definition of albedo?
   (b) What is Earth's average albedo?
   (c) Different surfaces have different albedos. The ocean has an albedo of about 0.06 when the sun is directly overhead. What does this imply about what happens to the inicident solar radiation on the ocean?

3. Insolation
   (a) What is the definition of solar insolation?
   (b) At any given location on Earth, list at least 3 things that affect the solar insolation at that location.

4. What does it mean to take a *zonal average*?

5. The solar insolation at the top of the atmosphere is about 342 W/m^2. The total radiation absorbed at the surface of the Earth is 494 W/m^2. Explain how it is possible to absorb more radiation at the surface than comes in at the top of the atmosphere.

6. Global energy flows
   (a) Draw a figure equivalent to Figure 1.3 in your book. Include arrows that show what happens to the incoming solar radiation, what happens to terrestrial radiation, and energy coming into and out of the atmosphere.
   (b) Add up all of the radiation absorbed by the surface from all sources. Add up all of the energy leaving the surface of the earth. Compare these values; is energy balanced at Earth's surface?

(c) Add up all of the radiation coming into the top of the atmosphere. Add up all of the radiation leaving the top of the atmosphere. Is energy balanced at the top of the atmosphere?

(d) Add up all sources of energy absorbed by the atmosphere. Add up all energy emitted by the atmosphere. Is the atmosphere in approximate energy balance?

7. Climate change on the back of an envelop

In class, we derived equation 2.14 in your book:

$$\frac{\Delta T_s}{T_0} \approx \frac{1}{4}\left(\frac{\Delta S}{S_0} - \frac{\Delta \alpha}{1-\alpha_0} - \frac{\Delta \epsilon}{\epsilon_0}\right) \quad .$$

(a) The left hand side of the equation represents the fractional change in surface temperature. What does each term on the right hand side represent?

(b) If CO_2 doubles, what term directly captures this change in the atmosphere? Does this result in an increase or decrease in globally average surface temperature?

(c) A doubling of CO_2 changes the globally averaged surface temperature. How might this affect the Earth's albedo? How might this influence temperature? This is related to climate feedbacks that we'll discuss more later this semester.

Poster/Abstract preparation

1. Who are your team members?
2. Which data do you plan to use (HOBO sensors or weather balloon)? If you are not in lab, come talk to me.
3. What are your science questions related to the data? What is the problem or purpose of your research?
4. What is your hypothesis?
5. How will you use the data to answer these questions? This is the theoretical or experimental part of your plan.
6. Based on your data, what are your findings? What is your conclusion?

From Abstracts: New Mexico Tech (nmt.edu):
“Your SRS abstract should briefly state the problem or purpose of the research, explain the supported hypothesis, indicate the theoretical or experimental plan used, summarize the principle finding, point out the major conclusions, and if applicable how your research fits into the designated field of study. It should also be understandable for an educated audience of readers outside of the designated field.”

Poster Sessions: New Mexico Tech (nmt.edu)
Poster dimensions & templates.

Climate & Atmospheric Physics

PHYS 1996 Spring 2024

Problem Assignment # 3

---

1. Obliquity
   (a) What is obliquity?
   (b) What is the most important factor in determining the seasons?
   (c) Draw the sun and earth in a side view plane of the orbit. Draw Earth's axis of rotation relative to the sun for a northern hemisphere winter.
   (d) Repeat part (c) for northern hemisphere summer.
   (e) Repeat part (c) for the equinox.
   (f) What is the significance of the tropics of cancer and capricorn?
   (g) What is the significance of the artic and antarctic circles?
   (h) Presently, Earth's axis is tilted at 23.5°. What would the latitude of the tropic of cancer be if the tilt was 50°? What would the latitude of the artic circle be in this case?

2. Albedo
   (a) What is the definition of albedo?
   (b) What is Earth's average albedo?
   (c) Different surfaces have different albedos. The ocean has an albedo of about 0.06 when the sun is directly overhead. What does this imply about what happens to the inicident solar radiation on the ocean?

3. Insolation
   (a) What is the definition of solar insolation?
   (b) At any given location on Earth, list at least 3 things that affect the solar insolation at that location.

4. What does it mean to take a *zonal average*?

5. The solar insolation at the top of the atmosphere is about 342 W/m^2. The total radiation absorbed at the surface of the Earth is 494 W/m^2. Explain how it is possible to absorb more radiation at the surface than comes in at the top of the atmosphere.

6. Global energy flows
   (a) Draw a figure equivalent to Figure 1.3 in your book. Include arrows that show what happens to the incoming solar radiation, what happens to terrestrial radiation, and energy coming into and out of the atmosphere.
   (b) Add up all of the radiation absorbed by the surface from all sources. Add up all of the energy leaving the surface of the earth. Compare these values; is energy balanced at Earth's surface?

(c) Add up all of the radiation coming into the top of the atmosphere. Add up all of the radiation leaving the top of the atmosphere. Is energy balanced at the top of the atmosphere?

(d) Add up all sources of energy absorbed by the atmosphere. Add up all energy emitted by the atmosphere. Is the atmosphere in approximate energy balance?

7. Climate change on the back of an envelop

In class, we derived equation 2.14 in your book:

$$\frac{\Delta T_s}{T_0} \approx \frac{1}{4}\left(\frac{\Delta S}{S_0} - \frac{\Delta \alpha}{1-\alpha_0} - \frac{\Delta \epsilon}{\epsilon_0}\right) \quad .$$

(a) The left hand side of the equation represents the fractional change in surface temperature. What does each term on the right hand side represent?

(b) If CO_2 doubles, what term directly captures this change in the atmosphere? Does this result in an increase or decrease in globally average surface temperature?

(c) A doubling of CO_2 changes the globally averaged surface temperature. How might this affect the Earth's albedo? How might this influence temperature? This is related to climate feedbacks that we'll discuss more later this semester.

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	3832
Institution	NMT
Applicant(s)	alexandria.armendariz@nmt.edu
Status	NMHED_REVIEW
Submitted	2025-03-26 12:20 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Steve Simpson

Chief Academic Officer Email
Steve.simpson@nmt.edu

Registrar Name
Alexandria Armendariz

Registrar Email
alexandria.armendariz@nmt.edu

Course's Academic Department
Communication, Liberal Arts, Social Sciences

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
PHYS

Number
1996L

Title
Special Topics in Physics 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
PHYS

Number
1996L

Title
Special Topics in Physics 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
This is a special topics course with rotating topics. The outcomes vary based on the topic

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

This course provides foundational skills in physics to solve problems. Skills are introduced and practiced in lectures and homework assignments, then students identify a specific problem to apply these skills to. One version of the Special Topics Course is “Climate and Atmospheric Physics.” Students choose a topic area in which they gather and evaluate data based on skills from lecture and lab. They produce a poster or some other presentation format where they can discuss their problem, reasoning, and conclusions about the problem.

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

Quantitative Reasoning:

The lecture and lab work in tandem with one another in terms of content and project designs. Students collect and analyze data in labs, and often use this data as part of their research project that is introduced in the lecture. Students who do not enroll in the lab receive additional guidance related to data collection and analysis. The data and analysis are carefully related to physical models. In the context of Climate and Atmospheric Physics, the students relate data to models of general atmospheric circulation and energy flow in the atmosphere.

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

This course is very well-suited for increasing awareness of personal and social responsibility since it provides a physics foundation in special topics related to everyday life. For example, Climate and Atmospheric Physics emphasizes the foundational physics principles with a focus on energy to understand weather and climate, including the ways in which the basic state of the atmosphere is influenced by anthropogenic and non-anthropogenic sources. Increasing the understanding of the underlying physics and how it influences changes in our environment leads to more informed personal choices and awareness of social responsibility. The course also requires collaboration, as students work in groups – particular in the labs – to solve problems.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

https://www.nmt.edu/academicaffairs/assessment/gened.php

Application History

Type	username	Text	Timestamp
Submittal	alexandria.armendariz@nmt.edu	Submitted by alexandria.armendariz@nmt.edu	2025-03-26 12:20 PM (US/Mountain)
Authorization	alexandria.armendariz@nmt.edu	alexandria.armendariz@nmt.edu has authorized the application for submittal	2025-03-26 12:20 PM (US/Mountain)
Created	alexandria.armendariz@nmt.edu	Application started by alexandria.armendariz@nmt.edu	2025-03-26 12:18 PM (US/Mountain)

Climate & Atmospheric Physics

PHYS 1996 Spring 2024

Problem Assignment # 3

---

1. Obliquity
   (a) What is obliquity?
   (b) What is the most important factor in determining the seasons?
   (c) Draw the sun and earth in a side view plane of the orbit. Draw Earth's axis of rotation relative to the sun for a northern hemisphere winter.
   (d) Repeat part (c) for northern hemisphere summer.
   (e) Repeat part (c) for the equinox.
   (f) What is the significance of the tropics of cancer and capricorn?
   (g) What is the significance of the artic and antarctic circles?
   (h) Presently, Earth's axis is tilted at 23.5°. What would the latitude of the tropic of cancer be if the tilt was 50°? What would the latitude of the artic circle be in this case?

2. Albedo
   (a) What is the definition of albedo?
   (b) What is Earth's average albedo?
   (c) Different surfaces have different albedos. The ocean has an albedo of about 0.06 when the sun is directly overhead. What does this imply about what happens to the inicident solar radiation on the ocean?

3. Insolation
   (a) What is the definition of solar insolation?
   (b) At any given location on Earth, list at least 3 things that affect the solar insolation at that location.

4. What does it mean to take a *zonal average*?

5. The solar insolation at the top of the atmosphere is about 342 W/m^2. The total radiation absorbed at the surface of the Earth is 494 W/m^2. Explain how it is possible to absorb more radiation at the surface than comes in at the top of the atmosphere.

6. Global energy flows
   (a) Draw a figure equivalent to Figure 1.3 in your book. Include arrows that show what happens to the incoming solar radiation, what happens to terrestrial radiation, and energy coming into and out of the atmosphere.
   (b) Add up all of the radiation absorbed by the surface from all sources. Add up all of the energy leaving the surface of the earth. Compare these values; is energy balanced at Earth's surface?

(c) Add up all of the radiation coming into the top of the atmosphere. Add up all of the radiation leaving the top of the atmosphere. Is energy balanced at the top of the atmosphere?

(d) Add up all sources of energy absorbed by the atmosphere. Add up all energy emitted by the atmosphere. Is the atmosphere in approximate energy balance?

7. Climate change on the back of an envelop

In class, we derived equation 2.14 in your book:

$$\frac{\Delta T_s}{T_0} \approx \frac{1}{4}\left(\frac{\Delta S}{S_0} - \frac{\Delta \alpha}{1-\alpha_0} - \frac{\Delta \epsilon}{\epsilon_0}\right) \quad .$$

(a) The left hand side of the equation represents the fractional change in surface temperature. What does each term on the right hand side represent?

(b) If CO_2 doubles, what term directly captures this change in the atmosphere? Does this result in an increase or decrease in globally average surface temperature?

(c) A doubling of CO_2 changes the globally averaged surface temperature. How might this affect the Earth's albedo? How might this influence temperature? This is related to climate feedbacks that we'll discuss more later this semester.

Poster/Abstract preparation

1. Who are your team members?
2. Which data do you plan to use (HOBO sensors or weather balloon)? If you are not in lab, come talk to me.
3. What are your science questions related to the data? What is the problem or purpose of your research?
4. What is your hypothesis?
5. How will you use the data to answer these questions? This is the theoretical or experimental part of your plan.
6. Based on your data, what are your findings? What is your conclusion?

From Abstracts: New Mexico Tech (nmt.edu):
“Your SRS abstract should briefly state the problem or purpose of the research, explain the supported hypothesis, indicate the theoretical or experimental plan used, summarize the principle finding, point out the major conclusions, and if applicable how your research fits into the designated field of study. It should also be understandable for an educated audience of readers outside of the designated field.”

Poster Sessions: New Mexico Tech (nmt.edu)
Poster dimensions & templates.

Poster/Abstract preparation

1. Who are your team members?
2. Which data do you plan to use (HOBO sensors or weather balloon)? If you are not in lab, come talk to me.
3. What are your science questions related to the data? What is the problem or purpose of your research?
4. What is your hypothesis?
5. How will you use the data to answer these questions? This is the theoretical or experimental part of your plan.
6. Based on your data, what are your findings? What is your conclusion?

From Abstracts: New Mexico Tech (nmt.edu):
“Your SRS abstract should briefly state the problem or purpose of the research, explain the supported hypothesis, indicate the theoretical or experimental plan used, summarize the principle finding, point out the major conclusions, and if applicable how your research fits into the designated field of study. It should also be understandable for an educated audience of readers outside of the designated field.”

Poster Sessions: New Mexico Tech (nmt.edu)
Poster dimensions & templates.

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4403
Institution	NMT
Applicant(s)	thomas.kaus@nmt.edu
Status	NMHED_REVIEW
Submitted	2025-09-08 11:23 AM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Steve Simpson

Chief Academic Officer Email
Steve.simpson@nmt.edu

Registrar Name
Tom Kaus

Registrar Email
Thomas.kaus@nmt.edu

Course's Academic Department
Communication, Liberal Arts, Social Sciences

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
PHIL

Number
2040

Title
Science and Gender

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
PHIL

Number
2040

Title
Science and Gender

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.

By the end of class, students will be able to: 1. Construct and clearly communicate arguments about sex /gender/sexuality and science; and defend their judgments with charity and without logical fallacies. 2. Write and research essays about contemporary scientific debates over gender with analytic structure that engage with popular and scholarly conversations. 3. Recognize how human cultures and value judgments shape the process of science and the practice of medicine, including dichotomies (e.g., nature/culture, sex/gender), biases (e.g., heteronormativity, Eurocentrism), and standpoints (e.g., Black feminism, disability rights). 4. Evaluate critically scientific studies in terms of their assumptions about sex, gender, sexuality, etc., and their methodology; and analyze how to improve their theories, inferences, and objectivity

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- For their final projects, students conduct a critical analysis of one debatable piece of research, technology, or law/policy related to science, sex, & gender. They get to choose their own problem or question, and I guide them through this process in a workshop on scholarly and popular research; they begin looking through news websites etc., to think about public issues, and then we delve into scholarly databases to start refining their questions.

-Evidence Acquisition- In that same workshop, I instruct students on how and when to look for scholarly vs. popular articles. For instance, we talk about using popular sources for citing claims related to current events, and the many reasons that scholarly sources are needed: for non-obvious empirical claims (statistics, causes), for crediting and attributing ideas, and for making an argument more plausible or authoritative.

-Evidence Evaluation- In another workshop on Scientific Criticism and Literacy, we evaluate a retracted article. We first analyze the methods and questions of the article, and then look at different critiques published (both popular and scholarly) of the article's conclusions. Students work in groups on the different sections of the paper to make sense of their reasoning and identify gaps in their logic. For instance, in the statistics group, they discuss proxy measures and the assumptions needed for the proxies to be reliable.

-Reasoning/Conclusion- Each day of class I cover a different "Fallacy of the Day," coming from a handout in the first week of class. Fallacies are unsupported reasoning, when a conclusion does not follow from the premises presented. Students are encouraged to review this handout regularly, and typically the Fallacy of the Day will show up somewhere in class, and students are then primed to look for that pattern of fallacious reasoning and explain how the error was committed.

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 – One of the major ideas in the class is Standpoint Theory, which articulates the benefits of challenges of "outsides within." Students discuss the challenges faced by scientists from excluded ethnic groups, as well as the epistemic benefits of their standpoint given the cultural hegemonies in STEM. Students are also tasked with reading articles from post-colonial thinkers in Native American anthropology, Indian/Hindu philosophy, and Africana studies. While students struggle to think outside their background, these perspectives enable them to broaden their minds.
-Ethical Reasoning – Throughout the course, issues of inequity and inequality abound, and students are presented with the challenging structure dimensions and tasked with evaluating potential reforms. For instance, in Week 7 on sexual discrimination and gender harassment in STEM, students post online questions for their peers about ethical issues raised by the past and present exclusions. They then discuss in class and online about how the responsibility is shared but also unique to the different positions of power held in scientific laboratories and institutions.

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- One of the main goals of the class is to have students question the assumed authority of science in our society. Students learn how to avoid the fallacy of "Appeal to Authority" by focusing on the logic of an argument and the methodology of the study, with careful attention to bias and standpoint. We cover a variety of biases in STEM, including how human cultures and value judgments shape the process of science and the practice of medicine, including false dichotomies (e.g., nature/culture, sex /gender), unfair/unjust biases (e.g., heteronormativity, Eurocentrism), and critical standpoints (e.g., racial /ethnic background, gender identity, sexual orientation).
-Information Structures- For their student-led discussions, students must research the background on a topic their group has chosen related to the weekly theme (e.g., The HIV/AIDS Epidemic). They orient their presentation around 1 or 2 open ended questions, which are the culmination, and then present information they have researched but only what is relevant to the discussion at hand. To refine their organization of information, student groups submit a draft to the instructor, who then comments on what information is unnecessary/redundant and what additional information is needed for an informed discussion.
-Digital Literacy- In this class, students work in a multimedia environment. Many of their reading responses are submitted in digital forums. Students read and critique examples of online articles, podcasts, institutional websites, etc.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

https://www.nmt.edu/academicaffairs/assessment/gened.php

Application History

Type	username	Text	Timestamp
Submittal	thomas.kaus@nmt.edu	Submitted by thomas.kaus@nmt.edu	2025-09-08 11:23 AM (US/Mountain)
Authorization	thomas.kaus@nmt.edu	thomas.kaus@nmt.edu has authorized the application for submittal	2025-09-08 11:23 AM (US/Mountain)
Created	thomas.kaus@nmt.edu	Application started by thomas.kaus@nmt.edu	2025-09-08 11:16 AM (US/Mountain)

PHIL 2040, Spring 2024, **Final Paper Stage 2: Draft Peer-Review** (**Handout 7**)

Peer-Reviewer (You)_____
Paper Author (Your Peer) _____

3 (absolutely) *2 (adequately)* *1 (not at all)*

COMPLETENESS:

_____ 1. TARGET: Does the author find and describe a singular debatable piece of research, technology, or policy related to science & gender/sex/sexuality (from the past decade)?

_____ 2. POSITION: Does the author take a strong critical stance toward one or more aspects of the research/technology/policy, based on its methodological, theoretical, or ethical problems?

_____ 3. GROUNDS: Does the author completely elaborate their position, drawing on course materials, outside knowledge, and personal experience?

_____ 4. DEFENSE: Does the author defend their position well from 2+ strong objections with equally strong responses, and discuss its broader implications?
Warm comment on completeness:

Constructive comment on completeness:

CHARITY:

_____ 5. INTERPRETATION: Does the author charitably represent their target, particularly in terms of assuming the best, most rational interpretation of the opposition and avoiding strawman fallacies?

_____ 6. STRENGTHS & WEAKNESSES: Does the author discuss the potential limitations of their own critical arguments, particularly in terms of the strength of objections to their own argument?
Warm comment on charity:

Constructive comment on charity:

CLARITY:

_____ 7. BACKGROUND: Does the author clearly introduce their analysis and frame it in context?

_____ 8. ORGANIZATION: Does the author clearly convey their argument and organize their analysis?

_____ 9. CONSISTENCY: Is the author's position stable & coherent throughout the entire paper?

_____ 10. RESEARCH: Does the author justify their arguments with necessary citations and references of sources, including both popular articles and scholarly (peer-reviewed) articles and books?

Warm comment on clarity:

Constructive comment on clarity:

OVERALL:

_____ / 30 TOTAL

Warm comments overall:

Constructive comments overall:

PHIL 2040, Spring 2024, **Final Paper Stage 2: Draft Peer-Review** (**Handout 7**)

Peer-Reviewer (You)_____
Paper Author (Your Peer) _____

3 (absolutely) *2 (adequately)* *1 (not at all)*

COMPLETENESS:

_____ 1. TARGET: Does the author find and describe a singular debatable piece of research, technology, or policy related to science & gender/sex/sexuality (from the past decade)?

_____ 2. POSITION: Does the author take a strong critical stance toward one or more aspects of the research/technology/policy, based on its methodological, theoretical, or ethical problems?

_____ 3. GROUNDS: Does the author completely elaborate their position, drawing on course materials, outside knowledge, and personal experience?

_____ 4. DEFENSE: Does the author defend their position well from 2+ strong objections with equally strong responses, and discuss its broader implications?
Warm comment on completeness:

Constructive comment on completeness:

CHARITY:

_____ 5. INTERPRETATION: Does the author charitably represent their target, particularly in terms of assuming the best, most rational interpretation of the opposition and avoiding strawman fallacies?

_____ 6. STRENGTHS & WEAKNESSES: Does the author discuss the potential limitations of their own critical arguments, particularly in terms of the strength of objections to their own argument?
Warm comment on charity:

Constructive comment on charity:

CLARITY:

_____ 7. BACKGROUND: Does the author clearly introduce their analysis and frame it in context?

_____ 8. ORGANIZATION: Does the author clearly convey their argument and organize their analysis?

_____ 9. CONSISTENCY: Is the author's position stable & coherent throughout the entire paper?

_____ 10. RESEARCH: Does the author justify their arguments with necessary citations and references of sources, including both popular articles and scholarly (peer-reviewed) articles and books?

Warm comment on clarity:

Constructive comment on clarity:

OVERALL:

_____ / 30 TOTAL

Warm comments overall:

Constructive comments overall:

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4404
Institution	NMT
Applicant(s)	thomas.kaus@nmt.edu
Status	NMHED_REVIEW
Submitted	2025-09-08 11:28 AM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Steve Simpson

Chief Academic Officer Email
Steve.simpson@nmt.edu

Registrar Name
Thomas Kaus

Registrar Email
Thomas.Kaus@nmt.edu

Course's Academic Department
Communication, Liberal Arts, Social Sciences

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
GNDR

Number
2040

Title
Science and Gender

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
GNDR

Number
2040

Title
Science and Gender

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.

By the end of class, students will be able to: 1. Construct and clearly communicate arguments about sex /gender/sexuality and science; and defend their judgments with charity and without logical fallacies. 2. Write and research essays about contemporary scientific debates over gender with analytic structure that engage with popular and scholarly conversations. 3. Recognize how human cultures and value judgments shape the process of science and the practice of medicine, including dichotomies (e.g., nature/culture, sex/gender), biases (e.g., heteronormativity, Eurocentrism), and standpoints (e.g., Black feminism, disability rights). 4. Evaluate critically scientific studies in terms of their assumptions about sex, gender, sexuality, etc., and their methodology; and analyze how to improve their theories, inferences, and objectivity

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- In week 4, to prepare for their student-led discussions, groups of two to three students present orally and digitally (using multimedia slides) background information on a topic related to weekly themes (e.g., Sexual diversity in the natural world) to facilitate a discussion on an open-ended question. The instructor provides guidance on public speaking, including posture, physicality/body language, voice, and preparation. Emphasis is placed on engaging with the audience.

-Strategies for Understanding and Evaluating Messages- For understanding the daily readings, students are instructed during week 2 in charitable reading and tips for comprehension (planning time to read, active note taking, reading journals). In class, students compare their summaries of the reading to contrast take-home points and different interpretations of the text.

-Evaluation and Production of Arguments- Nearly every class, we evaluate arguments by discussing how the author might respond to a hypothetical objection. For instance, in Week 8, we discussed Ruth Hubbard's critique of androcentrism in Darwin's theory of sexual selection. I then tasked students with responding to objections that (1) Darwin was just reporting what he observed (Nature cannot be sexist), and (2) it is impossible for scientists to avoid having the gender norms of their day influence their science. Students discuss their ideas in pairs and then share them with the group, and we evaluate how strong their responses are according to logical criteria and logical fallacies.

Critical Thinking. Problem Setting; Evidence Acquisition; Evidence 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- For their final projects, students conduct a critical analysis of one debatable piece of research, technology, or law/policy related to science, sex, & gender. They get to choose their own problem or question, and I guide them through this process in a workshop on scholarly and popular research; they begin looking through news websites etc., to think about public issues, and then we delve into scholarly databases to start refining their questions.
-Evidence Acquisition- In that same workshop, I instruct students on how and when to look for scholarly vs. popular articles. For instance, we talk about using popular sources for citing claims related to current events, and the many reasons that scholarly sources are needed: for non-obvious empirical claims (statistics, causes), for crediting and attributing ideas, and for making an argument more plausible or authoritative.
-Evidence Evaluation- In another workshop on Scientific Criticism and Literacy, we evaluate a retracted article. We first analyze the methods and questions of the article, and then look at different critiques published (both popular and scholarly) of the article's conclusions. Students works in groups on the different sections of the paper to make sense of their reasoning and identify gaps in their logic. For instance, in the statistics group, they discuss proxy measures and the assumptions needed for the proxies to be reliable.
-Reasoning/Conclusion- Each day of class I cover a different "Fallacy of the Day," coming from a handout in the first week of class. Fallacies are unsupported reasoning, when a conclusion does not follow from the premises presented. Students are encouraged to review this handout regularly, and typically the Fallacy of the Day will show up somewhere in class, and students are then primed to look for that pattern of fallacious reasoning and explain how the error was committed.

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 – One of the major ideas in the class is Standpoint Theory, which articulates the benefits of challenges of "outsides within." Students discuss the challenges faced by scientists from excluded ethnic groups, as well as the epistemic benefits of their standpoint given the cultural hegemonies in STEM. Students are also tasked with reading articles from post-colonial thinkers in Native American anthropology, Indian/Hindu philosophy, and Africana studies. While students struggle to think outside their background, these perspectives enable them to broaden their minds.
-Ethical Reasoning – Throughout the course, issues of inequity and inequality abound, and students are presented with the challenging structure dimensions and tasked with evaluating potential reforms. For instance, in Week 7 on sexual discrimination and gender harassment in STEM, students post online questions for their peers about ethical issues raised by the past and present exclusions. They then discuss in class and online about how the responsibility is shared but also unique to the different positions of power held in scientific laboratories and institutions.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

https://www.nmt.edu/academicaffairs/assessment/gened.php

Application History

Type	username	Text	Timestamp
Submittal	thomas.kaus@nmt.edu	Submitted by thomas.kaus@nmt.edu	2025-09-08 11:28 AM (US/Mountain)
Authorization	thomas.kaus@nmt.edu	thomas.kaus@nmt.edu has authorized the application for submittal	2025-09-08 11:28 AM (US/Mountain)
Created	thomas.kaus@nmt.edu	Application started by thomas.kaus@nmt.edu	2025-09-08 11:24 AM (US/Mountain)

GNDR/Φ 2040, Spring 2024, **Final Paper Stage 2: Draft Peer-Review** (**Handout 7**)

Peer-Reviewer (You)_____
Paper Author (Your Peer) _____

3 (absolutely) *2 (adequately)* *1 (not at all)*

COMPLETENESS:

_____ 1. TARGET: Does the author find and describe a singular debatable piece of research, technology, or policy related to science & gender/sex/sexuality (from the past decade)?

_____ 2. POSITION: Does the author take a strong critical stance toward one or more aspects of the research/technology/policy, based on its methodological, theoretical, or ethical problems?

_____ 3. GROUNDS: Does the author completely elaborate their position, drawing on course materials, outside knowledge, and personal experience?

_____ 4. DEFENSE: Does the author defend their position well from 2+ strong objections with equally strong responses, and discuss its broader implications?
Warm comment on completeness:

Constructive comment on completeness:

CHARITY:

_____ 5. INTERPRETATION: Does the author charitably represent their target, particularly in terms of assuming the best, most rational interpretation of the opposition and avoiding strawman fallacies?

_____ 6. STRENGTHS & WEAKNESSES: Does the author discuss the potential limitations of their own critical arguments, particularly in terms of the strength of objections to their own argument?
Warm comment on charity:

Constructive comment on charity:

CLARITY:

_____ 7. BACKGROUND: Does the author clearly introduce their analysis and frame it in context?

_____ 8. ORGANIZATION: Does the author clearly convey their argument and organize their analysis?

_____ 9. CONSISTENCY: Is the author's position stable & coherent throughout the entire paper?

_____ 10. RESEARCH: Does the author justify their arguments with necessary citations and references of sources, including both popular articles and scholarly (peer-reviewed) articles and books?

Warm comment on clarity:

Constructive comment on clarity:

OVERALL:

_____ / 30 TOTAL

Warm comments overall:

Constructive comments overall:

GNDR/Φ 2040, Spring 2024, **Final Paper Stage 2: Draft Peer-Review** (**Handout 7**)

Peer-Reviewer (You)_____
Paper Author (Your Peer) _____

3 (absolutely) *2 (adequately)* *1 (not at all)*

COMPLETENESS:

_____ 1. TARGET: Does the author find and describe a singular debatable piece of research, technology, or policy related to science & gender/sex/sexuality (from the past decade)?

_____ 2. POSITION: Does the author take a strong critical stance toward one or more aspects of the research/technology/policy, based on its methodological, theoretical, or ethical problems?

_____ 3. GROUNDS: Does the author completely elaborate their position, drawing on course materials, outside knowledge, and personal experience?

_____ 4. DEFENSE: Does the author defend their position well from 2+ strong objections with equally strong responses, and discuss its broader implications?
Warm comment on completeness:

Constructive comment on completeness:

CHARITY:

_____ 5. INTERPRETATION: Does the author charitably represent their target, particularly in terms of assuming the best, most rational interpretation of the opposition and avoiding strawman fallacies?

_____ 6. STRENGTHS & WEAKNESSES: Does the author discuss the potential limitations of their own critical arguments, particularly in terms of the strength of objections to their own argument?
Warm comment on charity:

Constructive comment on charity:

CLARITY:

_____ 7. BACKGROUND: Does the author clearly introduce their analysis and frame it in context?

_____ 8. ORGANIZATION: Does the author clearly convey their argument and organize their analysis?

_____ 9. CONSISTENCY: Is the author's position stable & coherent throughout the entire paper?

_____ 10. RESEARCH: Does the author justify their arguments with necessary citations and references of sources, including both popular articles and scholarly (peer-reviewed) articles and books?

Warm comment on clarity:

Constructive comment on clarity:

OVERALL:

_____ / 30 TOTAL

Warm comments overall:

Constructive comments overall:

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4405
Institution	NMT
Applicant(s)	thomas.kaus@nmt.edu
Status	NMHED_REVIEW
Submitted	2025-09-08 11:35 AM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Steve Simpson

Chief Academic Officer Email
Steve.simpson@nmt.edu

Registrar Name
Thomas Kaus

Registrar Email
Thomas.kaus@nmt.edu

Course's Academic Department
Communication, Liberal Arts, Social Sciences

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
HUMN

Number
2170

Title
Latin American Food and Culture

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
2170

Title
Latin American Food and Culture

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. Identify many of the principal ingredients, dishes, and modes of preparation of Latin American cuisine throughout history, from the pre-Columbian period to the present. 2. Describe Latin American foods in detail and express your appreciation for them. 3. Explain how food production and consumption relates to historical processes of political, social, and technological change in Latin America. 4. Synthesize complex arguments about Latin American food and culture, drawing on academic and journalistic sources. 5. Formulate a thoughtful and detailed response to the basic course questions: what can we learn about life in Latin America through its food? And what can we learn about ourselves by studying Latin American food?

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.

In this interdisciplinary humanities course, students learn to situate ingredients, dishes, and cooking techniques from a variety of Latin American national culinary traditions in a broad array of historical, cultural, sociopolitical, and technological contexts. Via brief lectures, secondary readings, in-class discussion activities, and discussion board assignments, they learn to identify foundational staple crops, domesticated animals, and ingredients of different historical and present-day cuisines, from pre-Columbian civilizations to modern industrialized societies in an increasingly globalized world (evidence acquisition). They also learn how to narrate the culinary histories of different Latin American countries, with an emphasis on when, why, and how ingredients entered into different national cuisines and came to form part of national cultures (evidence acquisition). Then, in research assignments, they formulate research questions concerning how a given cuisine emerges historically against the backdrop of the particular historical and geographical conditions of specific civilizations, countries, and/or regions (problem setting); they draw on secondary readings to seek out prominent ingredients, dishes, and techniques that give evidence of the cuisine's attributes and its relation to the historical processes they have chosen to study (evidence acquisition); they evaluate their research questions and the evidence acquired for their chosen cuisines in short in-class reflections, essay assignments, and audiovisual research presentation (evidence evaluation); and they draw conclusions concerning how culinary practices and traditions relate to their personal experiences and give evidence of the evolving collective fabric of Latin American and/or North American social existence (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.

Students in this course learn to apply intercultural reasoning and competence in their study of Latin American food and culture in a variety of ways. Students learn to identify unique characteristics of national and regional culinary traditions (for example, the widespread use of chiles in Mesoamerican and Andean cuisine, or the influence of mass European immigration in Argentine and Chilean cuisine), and, in in-class discussions and short discussion board assignments, they situate these characteristics in their original historical contexts, stretching from pre-Columbian ingredients, dishes, and techniques, to present-day culinary practices in the highly urbanized societies of Latin America (intercultural reasoning and intercultural competence). Tasting activities and short course readings also train students to identify ingredients and dishes shared by diverse cuisines, such as staple crops and ingredients that circulated around the world in the context of the post-1492 Columbian exchange (intercultural reasoning and intercultural competence). They demonstrate their capacities for intercultural reasoning in larger group and individual projects, such as a group presentation on a foundational ingredient in Latin American culinary history, and a whole-class potluck event in which the class makes dishes from the region and creates informative brochures to help their invited guests from the campus and local communities better understand the ingredients, dishes, and techniques of the region's cuisines (collaboration skills, teamwork and value system).

Students furthermore develop their collaboration skills, teamwork, and values through a series of interactive in-class activities and assignments. These include frequent group discussions based on prompts designed to help students reflect on how the food a given society consumes both that society's value systems and generates new ways of seeing and understanding collective existence (intercultural reasoning and intercultural competence); discussion board assignments where students engage with each other's thoughts and ideas concerning local and global culinary histories (intercultural reasoning and intercultural competence); and two larger group projects with practical components in which students prepare food to serve to classmates and invited guests, while also creating presentations and brochures that communicate the historical and cultural significance of their chosen ingredients, dishes, and techniques (collaboration skills, teamwork and value system).

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.

Via course readings, brief in-class lectures, and discussion activities, students in this course learn how to do research on Latin American food and culture using prominent internet search engines and social media platforms such as YouTube and Instagram to find primary materials and trends in Latin American cuisine, while also reflecting on the ways in which thoughts and ideas concerning food circulates in contemporary digital culture (digital literacy, information structure). In larger assignments such as a group presentation on a key ingredient in Latin American cuisine and an individual research presentation, they learn how to use basic research techniques such as using internet search engines to carry out parameter-based searches and using Google News, Google Scholar, and university library databases to encounter high-quality journalistic and academic sources concerning food history (authority and value of information, digital literacy). They also, in readings and in-class lectures and discussions, learn how the food industry has constructed mass consumer publics, molded tastes, and imposed the authority of industrialized food products via the use of advertising in audiovisual print, radio, television, and digital media (authority and value of information, digital literacy).

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

https://www.nmt.edu/academicaffairs/assessment/gened.php

Application History

Type	username	Text	Timestamp
Submittal	thomas.kaus@nmt.edu	Submitted by thomas.kaus@nmt.edu	2025-09-08 11:35 AM (US/Mountain)
Authorization	thomas.kaus@nmt.edu	thomas.kaus@nmt.edu has authorized the application for submittal	2025-09-08 11:35 AM (US/Mountain)
Created	thomas.kaus@nmt.edu	Application started by thomas.kaus@nmt.edu	2025-09-08 11:29 AM (US/Mountain)

HUMN 2170: Latin American Food and Culture Group Ingredient Presentation

Essential skill: Personal & Social Responsibility (component skills listed in **bold**; see the New Mexico General Education Curriculum for more information on essential skills)

Instructions: In groups of 4-5 students, you will choose one book from the following list of books on the global histories of different ingredients.

- Rosa Abreu-Runkel, *Vanilla: A Global History*
- Heather Arndt-Anderson, *Chillies: A Global History*
- Jonathan Deutsch and Megan J. Elias, *Barbecue: A Global History*
- Clarissa Hyman, *Tomato: A Global History*
- Michael Owen Jones, *Corn: A Global History*
- Jeff Miller, *Avocado: A Global History*
- Jonathan Morris, *Coffee: A Global History*
- Natalie Rachel Morris, *Beans: A Global History*
- Sarah Moss, *Chocolate: A Global History*
- Kaori O'Connor, *Pineapple: A Global History*
- Lorna Piatti-Farnell, *Banana: A Global History*
- Andrew F. Smith, *Potato: A Global History*
- Andrew F. Smith, *Sugar: A Global History*
- William Rubel, *Bread: A Global History*

Your group will then do the following:

1. Read and discuss the book together, focusing on the social, cultural, and technological contexts of the ingredient's history in global cuisine, and how each group member's perspective on the ingredient evolves as they learn about its history (**intercultural reasoning and intercultural competence**).
2. Then, prepare and deliver a 12-to-15-minute class presentation on the ingredient. The presentation should be informative and entertaining, and should focus on how the ingredient relates to Latin American history in particular; global history in general; and the contemporary realities of the students, the classmates, and their home communities (**intercultural reasoning and intercultural competence**). Your presentation will also include a tasting activity using a modest food budget. You can prepare food outside of class, or you can arrange for me to purchase prepared food items**.** *You will need to equitably divide responsibilities for the different aspects of the presentation, and you will have two full days of class time to discuss the book and work on your presentations* (**collaboration skills**, **teamwork and value systems**)

Rubric

Category	**Points**

Title slide with effective visual material. Your title slide contains intriguing visuals that capture your audience's attention as they wait for the presentation to begin. It contains the group members' names, the name of the class, and the date.	/5
Body of presentation (inform). Is your presentation informative? Do you give a good general overview of the ingredient and its history, with a good number of specific facts? Do you highlight the ingredient's connection to your own lives, to global cuisine, and to Latin America in particular? (**intercultural reasoning and intercultural competence**)	/40
Body of presentation (entertain). Is your presentation enjoyable? Does it flow well? Is the food portion (sample and discussion) fun? Do you include unique/interesting anecdotes about the ingredient that connect with the experiences and cultural backgrounds of your audience members? (**intercultural reasoning and intercultural competence**)	/15
Design, organization, and citation. Your presentation is well-designed and organized. You acknowledge your source material where necessary. You have a good balance of textual and visual materials. Visual materials are enlarged as much as possible (no wasted space in slides!). Text is no smaller than 14 points for the body of slides, and 12 points for image captions. Page numbers are cited for the *Global Histories* book. Images not taken from the book are cited via hyperlink (see model presentation). The final page of the presentation is a "Work Cited" page with the book listed in MLA format, an about the author section, and a brief review.	/20
Creation and delivery of presentation (individual grade). The work for the presentation is divided equitably among group members, and each group member contributes a balanced amount of the in-class presentation. Each member's contribution goes well beyond reading the information written on the slides: you demonstrate that you have read the book and learned about the ingredient, and you are a relative expert on the topic. (**collaboration skills, teamwork and value systems**)	/20
Total	/100

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4406
Institution	NMT
Applicant(s)	thomas.kaus@nmt.edu
Status	NMHED_REVIEW
Submitted	2025-09-08 11:45 AM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Steve Simpson

Chief Academic Officer Email
Steve.simpson@nmt.edu

Registrar Name
Thomas Kaus

Registrar Email
Thomas.kaus@nmt.edu

Course's Academic Department
Communication, Liberal Arts, Social Sciences

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
HUMN

Number
2180

Title
Latin American Popular Music

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
2180

Title
Latin American Popular Music

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. . Identify many of the key singers, musicians, songs, albums, and genres of Latin American popular music. 746 Revised 3/10/2025 2. Define key concepts related to the study of music and culture and apply those concepts to particular musical works in essays and class presentations. 3. Narrate the history of some of the principal genres of Latin American popular music (tango, salsa, samba/bossa nova, the corrido, cumbia, funk, and reggaetón), including each genre's origin, key recordings, and popularization. 4. Relate musical works to broader processes of political, economic, cultural, and technological change in modern Latin America.

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.

In this interdisciplinary humanities course, students learn to situate musical works from a variety of popular Latin American musical genres (for example, tango, samba, ranchera, salsa, cumbia, bachata, reggaeton, funk) in a broad array of historical, cultural, sociopolitical, and technological contexts. Via brief lectures, secondary readings, in-class discussion activities, and discussion board assignments, they learn to identify the form and thematic content of prominent songs from each genre, collect examples of songs that exemplify each genre, and learn to narrate and analyse the genre's history (evidence acquisition, evidence evaluation). Then, in research assignments, they formulate research questions concerning how a given genre emerges historically against the backdrop of the historical experiences of specific Latin American countries and/or of the region as a whole (problem setting); they draw on secondary readings to seek out prominent artists and songs that give evidence of the genre's attributes and its relation to the historical processes they have chosen to study (evidence acquisition, evidence evaluation); they evaluate their research questions in line with their chosen primary materials in short in-class reflections, essay assignments, and audiovisual research presentations, and the evaluate the quality of sources and information (evidence evaluation); and they draw conclusions concerning how musical works impact their personal experiences and relate to the past-and-present-day social contexts of Latin American and/or North American life (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.

Students in this course learn to apply intercultural reasoning and competence in their study of Latin American musical genres in a variety of ways. Students learn to identify unique characteristics of genres emerging from different national and transnational contexts (for example, tango in Argentina, samba in

Brazil, salsa in Puerto Rico/New York City), and, in in-class discussions and short discussion board assignments, they situate these characteristics in their original historical contexts, and also relate them to their own cultural backgrounds (intercultural reasoning and intercultural competence). Listening activities and short course readings also train students to identify musical elements shared by diverse genres, such as the tresillo, Habanera, and clave rhythms that have been used in Afro-Latin-American musical forms for the past century and beyond. They demonstrate their capacities for intercultural reasoning in larger group and individual presentations, such as a group presentation on a foundational song in a chosen genre, and an individual presentation on a prominent Latin American musical genre. In these projects, they relate their own cultural backgrounds and value systems (and those of their classmates) to the cultural contexts in which the music they are studying was created (intercultural reasoning and intercultural competence, collaboration skills, teamwork and value system).
Students furthermore develop their collaboration skills, teamwork, and values through a series of interactive in-class activities and assignments. These include frequent group discussions based on prompts designed to help students reflect on how music both reflects a given society's value systems and generates new ways of seeing and understanding collective existence (intercultural reasoning and intercultural competence); discussion board assignments where students engage with each other's thoughts and ideas concerning musical form and thematic content; and a larger group project in which students analyze a prominent song and interpret its cultural and sociopolitical significance (collaboration skills, teamwork and value system).

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.

Via course readings, brief in-class lectures, and discussion activities, students in this course learn how to do research on popular music using prominent internet and social media platforms such as YouTube and Spotify to find primary audiovisual materials, and reflect on the ways in which these platforms function as musical archives and relate to other historical forms of recording, transmitting, and preserving popular music (digital literacy, information structure). In larger assignments such as a group song presentation and an individual audiovisual presentation on a prominent Latin American genre, they learn how to apply basic informal research techniques, such as using major social media platforms and internet search engines to carry out parameter-based searches, to inquire into the history of musical genres, beginning with canonical songs and artists and searching for a growing network of influences crossing geographical and historical lines (authority and value of information, digital literacy). They also, in readings and in-class lectures and discussions, learn how the music industry has constructed audiences and imposed the authority of its products via the development of the star system in ad-supported radio broadcasts; Hollywood, and Latin American film and music industries; and contemporary ad-and-subscription-based platforms such as Spotify and YouTube (digital literacy, information structure).

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

https://www.nmt.edu/academicaffairs/assessment/gened.php

Application History

Type	username	Text	Timestamp
Submittal	thomas.kaus@nmt.edu	Submitted by thomas.kaus@nmt.edu	2025-09-08 11:45 AM (US/Mountain)
Authorization	thomas.kaus@nmt.edu	thomas.kaus@nmt.edu has authorized the application for submittal	2025-09-08 11:44 AM (US/Mountain)
Created	thomas.kaus@nmt.edu	Application started by thomas.kaus@nmt.edu	2025-09-08 11:36 AM (US/Mountain)

HUMN 2180: Latin American Popular Music Individual Genre Presentation

Essential skill: Critical thinking (component skills listed in **bold**; see the New Mexico General Education Curriculum for more information on essential skills)

Instructions: You will choose a genre from the list below and prepare a ten-plus minute video presentation on its history and its primary characteristics. Alternately, if you have a genre you are interested in studying, you can create your own topic. Your presentation will explain the origins of the genre, asking how it emerged in relation to its historical, cultural, sociopolitical, and/or technological contexts (**problem setting**). You will do some light research into the genre and its history—I will give you one good source to work with, and you'll need to cite at least three other sources, as well as make a short playlist (12-15 tracks) of some of the genre's most important songs (**evidence acquisition**). In your presentation, you will analyze **three** songs that you consider to be good examples of the genre. You will use the songs to illustrate some of the primary thematic and musical elements of the genre, and explain how the songs emerge in relation to the genre and its context(s) (**evidence evaluation**). In the conclusion of your presentation, you will reflect on why the genre was important in its historical moment, and how it can still impact the world today (**reasoning/conclusion**).

You will submit two files for this assignment: a video file of yourself giving the presentation (made using Zoom or a different app if you prefer), and a Google Slides or PowerPoint file of the presentation, with hyperlinks to direct readers to your playlist of songs in the genre and to the specific songs you have chosen analyzing.

Rubric:

Category	Points
Origin story and chronology. After the title slide, your next few slides tell the story of the genre's origin and provide a basic timeline of important events in the genre's history. When you are narrating the genre's origin, try to mention how it emerges out of other existing musical genres, and also explain how its "birth" relates to its social, political, and/or cultural context (for example, in class we related Tropicália to political upheaval and revolutions, and we related Norteña/Banda songs about the drug trade to the *Guerra contra el narco*). The chronology slide should highlight key moments in the genre's history. (**problem setting**)	/20
Song analysis: basic information. For each of the three songs you choose to spotlight, provide the artist, song title, and year, along with some combination of additional information. This can include, but is not limited to, the lyricist, the arranger, the producer, the musicians, or any other information about the song that you think is helpful. (**evidence acquisition**)	/10
Song analysis: musical and lyrical elements. For each of the songs you choose, highlight elements of the music *and* the lyrics that make the song a strong example of the genre. The idea is that at the end of this presentation, your classmates can easily identify *other* songs in the genre based on what	/20

they've learned in your presentation. You can include snippets from the songs if you want, but each snippet should be no longer than 30-40 seconds. (**evidence evaluation**)	
Conclusion. Your conclusion reflects on the genre's historical significance and makes a clear defense of its ongoing importance in today's world (**reasoning/conclusion**)	
Design, proofreading, and citation. Your presentation generally follows the basic format of the model presentation (but you can be more creative than I am with my slides). In particular, it checks the following boxes: • Title slide with an original title, name, class, date, and a large, archival image with clear historical value. • All slides except lyric slides contain large archival images with clear historical value. • All images are accompanied by captions and hyperlinks to sources. • The text in all slides is AT LEAST 14 point font. • The text is proofread and is generally free from grammatical errors. • You list at least four sources in your works cited, and you actually mention those sources during your presentation.	/15
Delivery of presentation. You have rehearsed and your presentation goes smoothly. You do not just read off the slides (aim for *at most* 30% of your presentation to be read off the slides). You use notes, an outline, or a written script to supplement what you have on the slides (watch the sample presentation for an example of how this works).	/15
Meeting deadlines / supporting your classmates / providing feedback. You have the presentation ready on November 6. You are in class on November 6 to give feedback to your classmates. You are supportive and give helpful feedback.	/10
Grade	/100

Genre options / Topics (maximum four students per genre):

Reggaeton	**Samba**	**Bossa nova**	**Ranchera**
Bolero	**Funk carioca (Brazilian hip-hop genre)**	**Huayno (Andean genre)**	**Salsa**
Bachata	**Sertanejo (Brazilian country music)**	**Cumbia in Mexico**	**Mambo**
Norteña	**Tango**	**Dembow**	**Son**
Tropicália	**Merengue**	**Corrido**	**Vallenato**

Mariachi	**Banda**	**Balada romántica**	**Rock in Argentina**
Nueva canción chilena (Chilean folk/protest music from the 60s and 70s)	**Cumbia in Peru**	**Nueva trova**	**Corridos tumbados (recent Mexican genre)**
Waltz in Mexico	**Latin freestyle (1980s hip-hop genre)**	**Rock in Mexico**	**Rumba**
Forró (Brazilian genre)	**Cumbia in Colombia**	**Grupera (Mexican pop cumbia music)**	**Invent your own topic**

HUMN 2180: Latin American Popular Music Individual Genre Presentation

Essential skill: Critical thinking (component skills listed in **bold**; see the New Mexico General Education Curriculum for more information on essential skills)

Instructions: You will choose a genre from the list below and prepare a ten-plus minute video presentation on its history and its primary characteristics. Alternately, if you have a genre you are interested in studying, you can create your own topic. Your presentation will explain the origins of the genre, asking how it emerged in relation to its historical, cultural, sociopolitical, and/or technological contexts (**problem setting**). You will do some light research into the genre and its history—I will give you one good source to work with, and you'll need to cite at least three other sources, as well as make a short playlist (12-15 tracks) of some of the genre's most important songs (**evidence acquisition**). In your presentation, you will analyze **three** songs that you consider to be good examples of the genre. You will use the songs to illustrate some of the primary thematic and musical elements of the genre, and explain how the songs emerge in relation to the genre and its context(s) (**evidence evaluation**). In the conclusion of your presentation, you will reflect on why the genre was important in its historical moment, and how it can still impact the world today (**reasoning/conclusion**).

You will submit two files for this assignment: a video file of yourself giving the presentation (made using Zoom or a different app if you prefer), and a Google Slides or PowerPoint file of the presentation, with hyperlinks to direct readers to your playlist of songs in the genre and to the specific songs you have chosen analyzing.

Rubric:

Category	Points
Origin story and chronology. After the title slide, your next few slides tell the story of the genre's origin and provide a basic timeline of important events in the genre's history. When you are narrating the genre's origin, try to mention how it emerges out of other existing musical genres, and also explain how its "birth" relates to its social, political, and/or cultural context (for example, in class we related Tropicália to political upheaval and revolutions, and we related Norteña/Banda songs about the drug trade to the *Guerra contra el narco*). The chronology slide should highlight key moments in the genre's history. (**problem setting**)	/20
Song analysis: basic information. For each of the three songs you choose to spotlight, provide the artist, song title, and year, along with some combination of additional information. This can include, but is not limited to, the lyricist, the arranger, the producer, the musicians, or any other information about the song that you think is helpful. (**evidence acquisition**)	/10
Song analysis: musical and lyrical elements. For each of the songs you choose, highlight elements of the music *and* the lyrics that make the song a strong example of the genre. The idea is that at the end of this presentation, your classmates can easily identify *other* songs in the genre based on what	/20

they've learned in your presentation. You can include snippets from the songs if you want, but each snippet should be no longer than 30-40 seconds. (**evidence evaluation**)	
Conclusion. Your conclusion reflects on the genre's historical significance and makes a clear defense of its ongoing importance in today's world (**reasoning/conclusion**)	
Design, proofreading, and citation. Your presentation generally follows the basic format of the model presentation (but you can be more creative than I am with my slides). In particular, it checks the following boxes: • Title slide with an original title, name, class, date, and a large, archival image with clear historical value. • All slides except lyric slides contain large archival images with clear historical value. • All images are accompanied by captions and hyperlinks to sources. • The text in all slides is AT LEAST 14 point font. • The text is proofread and is generally free from grammatical errors. • You list at least four sources in your works cited, and you actually mention those sources during your presentation.	/15
Delivery of presentation. You have rehearsed and your presentation goes smoothly. You do not just read off the slides (aim for *at most* 30% of your presentation to be read off the slides). You use notes, an outline, or a written script to supplement what you have on the slides (watch the sample presentation for an example of how this works).	/15
Meeting deadlines / supporting your classmates / providing feedback. You have the presentation ready on November 6. You are in class on November 6 to give feedback to your classmates. You are supportive and give helpful feedback.	/10
Grade	/100

Genre options / Topics (maximum four students per genre):

Reggaeton	**Samba**	**Bossa nova**	**Ranchera**
Bolero	**Funk carioca (Brazilian hip-hop genre)**	**Huayno (Andean genre)**	**Salsa**
Bachata	**Sertanejo (Brazilian country music)**	**Cumbia in Mexico**	**Mambo**
Norteña	**Tango**	**Dembow**	**Son**
Tropicália	**Merengue**	**Corrido**	**Vallenato**

Mariachi	**Banda**	**Balada romántica**	**Rock in Argentina**
Nueva canción chilena (Chilean folk/protest music from the 60s and 70s)	**Cumbia in Peru**	**Nueva trova**	**Corridos tumbados (recent Mexican genre)**
Waltz in Mexico	**Latin freestyle (1980s hip-hop genre)**	**Rock in Mexico**	**Rumba**
Forró (Brazilian genre)	**Cumbia in Colombia**	**Grupera (Mexican pop cumbia music)**	**Invent your own topic**

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4399
Institution	ENMU-RU
Applicant(s)	jeff.frawley@enmu.edu
Status	NMHED_REVIEW
Submitted	2025-09-05 05:41 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Coda Omness

Chief Academic Officer Email
coda.omness@enmu.edu

Registrar Name
RaLynne Stanbrough

Registrar Email
ralynne.stanbrough@enmu.edu

Course's Academic Department
Language, Fine Arts, and Humanities

Is this a Application a Re-Submission
yes

Describe the Clarifications to the Original Application
This resubmission includes additional details and information added using feedback on the previous submission in 2023.

Institutional Course Information

Prefix
ARTS

Number
1520

Title
Digital Media 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
ARTS

Number
1520

Title
Digital Media I

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.

• Demonstrate appropriate skills in configuring and navigating computer systems software applications as appropriate to digital image making needs including organization of files using keywords and running batch processes.
• Exhibit an understanding of a layer-based bitmap editing program, through photo retouching, precise using of selection tools, and color adjustment techniques.
• Create imagery using a vector-based illustration program which demonstrates an understanding of vector based drawing tools.
• Integrate the use of bitmap and vector images using bitmap and vector-based image making applications to demonstrate a basic understanding of composition, color, and appropriate image size and resolution.

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

None

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.

This course focuses on basic graphic design principles and a few common software programs (e.g. Adobe Illustrator and Photoshop) through which students develop design skills. Students complete regular in-class quizzes on common graphic design principles, concepts, and genre conventions. Quizzes likewise cover rhetorical purposes of specific graphic design techniques and concepts such as masking, font types, color schemes, photo manipulation, etc. Students complete four major graphic design projects—visual patterns, portraiture, photo restoration, and postcards—for which they must apply their understanding of genre conventions while also demonstrating rhetorical purpose. As a part of this process, the course includes regular in-class peer critiques of student drafts of work, which focus on technique along with genre and rhetorical awareness. This feedback process likewise requires them to practice rhetorical awareness in crafting constructive feedback for an audience of peers. In class, students review a variety of sample published graphic design works, seeking evidence from these samples in order to analyze the messages, arguments, and effectiveness of the works. Later, students complete the same process for their own development as graphic designers, through a series of “Skills Assessment” assignments: students must bring to class a work they’ve created that puts into practice a key graphic design technique, process, or genre, and both the student creator and classmates analyze the message and effectiveness of this work. Students complete an assignment on typeface and fonts for which they must research a specific font, finding credible sources online, and then complete a short writing assignment using this evidence to argue for the effectiveness (or ineffectiveness) of the font. Students must also write a 2-3 page artwork critique paper for which they must find a piece of artwork and apply an arts-focused framework of evaluation (Describe, Analyze, Interpret, Judge) in their critique of this artwork.

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

For the short artwork critique paper described above, students are in essence delineating a problem—what makes this piece of artwork good?—and then they answer that question using graphic design concepts and evidence from the artwork. Students also, in their four major graphic design projects, must set out a question of how to craft a specific type or genre of graphic design and then answer that question by applying the techniques and graphic design principles studied. In this analysis, and in peer-feedback critique sessions in class, students must evaluate evidence within graphic design works before critiquing the piece, and they then must articulate their reasoning using this evidence. One particular graphic design project, the "Photo Restoration" assignment, especially requires students to demonstrate critical thinking skills. For this project, they must digitally restore a damaged photograph; as part of this process, they must identify and evaluate the "evidence" of this damage before determining how best to solve the problem using a variety of digital software tools and techniques in order to restore the photo. In recent semesters, students have completed an "AI for Adobe Illustrator" assignment, for which they discuss the problem of AI ethics in graphic design (e.g. AI plagiarism of creative work, as well as the artistic merit of AI usage in creative work) before they use Illustrator AI tools to create a graphic design project and critique its artistic merit using evidence in the AI-generated content.

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.

Throughout the semester students are required to demonstrate intercultural reasoning and intercultural competence by studying a wide range of graphic design and artwork pieces, genres, and artists/publishers. In preparation for the "Written Critique" assignment (instructions attached), students view a variety of art pieces created by a diverse range of artists, across a variety of countries and cultural backgrounds, and from a range of time periods and social movements. They complete an in-class discussion for points on these art pieces, relating the artistic merit of the pieces to students' own perspectives and the perspectives of the cultures and time periods in which they were created. Students also demonstrate this competence, along with their collaboration skills, by participating in the campus's annual spring student art showcase. For this, they are required to attend and discuss with campus and community members the artistic intent of their showcased pieces. Students are likewise required to demonstrate collaborative skills, teamwork, and shared values as a part of the above-described peer feedback critiques of one another's graphic design projects. Lastly, as part of the "AI for Adobe Illustrator" assignment, students present to their peers their perspectives on the ethical implications of AI integration into graphic design fields. Students create their own creative works that implement AI, which they share with the group as part of a peer critique process, which provides additional opportunities for students to share, discuss, and further explore their ethical perspectives on this contemporary issue.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

Assessment plan is currently a work in progress

Application History

Type	username	Text	Timestamp
Submittal	jeff.frawley@enmu.edu	Submitted by jeff.frawley@enmu.edu	2025-09-05 05:41 PM (US/Mountain)
Authorization	jeff.frawley@enmu.edu	jeff.frawley@enmu.edu has authorized the application for submittal	2025-09-05 05:40 PM (US/Mountain)
Created	jeff.frawley@enmu.edu	Application started by jeff.frawley@enmu.edu	2025-09-05 05:06 PM (US/Mountain)

ARTS 1520 Digital Media I
Written Critique

***Directions*:** Develop a written critical analysis of a work of art or design. Use the four-step process of critique that includes Describe, Analyze, Interpret and Judge (Evaluate). Utilize class handouts as reference for complete description of the process. Include a color image of the art you chose to critique. Also include a sentence about why you chose this piece. You can either find a piece of famous artwork, preferably a painting, on your own, or you can choose from the artists/images below.

This is to be your original writing and analysis. You should not copy someone else's critical analysis. The only citations needed would be references that you make to another artwork for purposes of comparison only.

***Size*:** Two to three pages, 12-point type, double line spacing.

***Medium*:** Microsoft Word in color.

***Artist/Image Choices*:**

The *Starry Night*, Vincent Van Gogh	*The Unmasked Universe*, René Magritte
The Bullfight, Francisco Goya	*Three Women*, Fernand Léger
Trio, Steve Magada	*The Persistence of Memory*, Salvador Dali
Day and Night, M.C. Escher	*Under the Wave off Kanagawa*, Katsushika Hokusai
Dora Maar au Chat, Pablo Picasso	*White Branches, Mono Lake*, Ansel Adams
The Toast, Andres Zorn	*Young Girl in the Lap of Death*, Kathe Kollwitz
Brooklyn Bridge, Andy Warhol	*Adele Bloch-Bauer I*, Gustav Klimt

***Presentation*:** Include in the heading

your name	date
class and section	title : "Written Critique of *(Title)* by (Artist Name)"

***Craftsmanship*:** Neatness and organization of your thoughts is important. Effort and completeness are also considered here.

***Grading*:** 100 points total based on completion of each aspect listed above. See rubric

***Due*:** .

****** See next page!***

Your report MUST include the following:

Describe

You must include the artist's name, the full title of the piece, the date, the dimensions (if known), and the medium. The medium may be: oil paint, acrylic paint, watercolor, tempera, fresco, etching, photography, pencil, ink, charcoal, engraving, silkscreen, lithograph or other. The support (the material it is done on) could be canvas, wood, paper, wall, or other. What is the subject matter? It could be religious, mythological, portrait, still life, landscape, historical, daily life (genre), or nonrepresentational.

Analyze

Consider the formal design elements and principles. Ask how it relates to the subject matter. How is line used in the work? Does it seem to regulate or give order to the composition? Does it fragment the work? Is it consistent with traditional laws of perspective or does it violate them? What is the relation of shape to space in the work? Is there a great deal of tonal (value) contrast or is it held to a minimum? What is the predominant color scheme of the work? Are complementary or analogous colors employed? What other elements seem important? Is your attention drawn to the work's texture? Does time or motion seem an important factor in your experience of the work?

What principles of design are used to organize the composition? What is the focal point (emphasis)? Is there significant use of visual rhythm and repetition of elements? How is the composition balanced? Symmetrically? Asymmetrically? Do the work's various elements seem proportional, and how does the question of scale affect your perception? Does the composition seem unified or not?

Is the Rule of Thirds evident as a compositional tool? How do the elements relate to the format? How would the piece be affected if the format (landscape or portrait) were switched?

Consider the title. Does it help you interpret what you see? Can you imagine different treatments of the same subject matter that would change the way you "read" the work? What feelings does the piece evoke?

Has the artist's choice of medium played a role in the presentation of the various elements and their organization or design? Are effects achieved that are realizable only in this particular medium? If more than one medium is involved, what is their relation?

Interpret

What is the meaning of the work? What is the content, as opposed to the subject matter? What are the artist's intentions? How do these intentions manifest themselves in the composition? Are there other feelings or attitudes that the composition seems to evoke, and what specific elements or design choices account for those feelings? Are there symbolic meanings in the work? Does the work seem to have personal meaning to the artist? That is, is it biographical? Is the work a political or social commentary? Is there some larger philosophical, historical or social context that informs the work? Is there a historical style the work would fall under? If so, how does that affect the intended message?

Judge (Evaluate)

What does the work mean to you? Do you think the artist was successful in communicating the feeling or message that they intended?

ARTS 1520 Digital Media I
Written Critique

***Directions*:** Develop a written critical analysis of a work of art or design. Use the four-step process of critique that includes Describe, Analyze, Interpret and Judge (Evaluate). Utilize class handouts as reference for complete description of the process. Include a color image of the art you chose to critique. Also include a sentence about why you chose this piece. You can either find a piece of famous artwork, preferably a painting, on your own, or you can choose from the artists/images below.

This is to be your original writing and analysis. You should not copy someone else's critical analysis. The only citations needed would be references that you make to another artwork for purposes of comparison only.

***Size*:** Two to three pages, 12-point type, double line spacing.

***Medium*:** Microsoft Word in color.

***Artist/Image Choices*:**

The *Starry Night*, Vincent Van Gogh	*The Unmasked Universe*, René Magritte
The Bullfight, Francisco Goya	*Three Women*, Fernand Léger
Trio, Steve Magada	*The Persistence of Memory*, Salvador Dali
Day and Night, M.C. Escher	*Under the Wave off Kanagawa*, Katsushika Hokusai
Dora Maar au Chat, Pablo Picasso	*White Branches, Mono Lake*, Ansel Adams
The Toast, Andres Zorn	*Young Girl in the Lap of Death*, Kathe Kollwitz
Brooklyn Bridge, Andy Warhol	*Adele Bloch-Bauer I*, Gustav Klimt

***Presentation*:** Include in the heading

your name	date
class and section	title : "Written Critique of *(Title)* by (Artist Name)"

***Craftsmanship*:** Neatness and organization of your thoughts is important. Effort and completeness are also considered here.

***Grading*:** 100 points total based on completion of each aspect listed above. See rubric

***Due*:** .

****** See next page!***

Your report MUST include the following:

Describe

You must include the artist's name, the full title of the piece, the date, the dimensions (if known), and the medium. The medium may be: oil paint, acrylic paint, watercolor, tempera, fresco, etching, photography, pencil, ink, charcoal, engraving, silkscreen, lithograph or other. The support (the material it is done on) could be canvas, wood, paper, wall, or other. What is the subject matter? It could be religious, mythological, portrait, still life, landscape, historical, daily life (genre), or nonrepresentational.

Analyze

Consider the formal design elements and principles. Ask how it relates to the subject matter. How is line used in the work? Does it seem to regulate or give order to the composition? Does it fragment the work? Is it consistent with traditional laws of perspective or does it violate them? What is the relation of shape to space in the work? Is there a great deal of tonal (value) contrast or is it held to a minimum? What is the predominant color scheme of the work? Are complementary or analogous colors employed? What other elements seem important? Is your attention drawn to the work's texture? Does time or motion seem an important factor in your experience of the work?

What principles of design are used to organize the composition? What is the focal point (emphasis)? Is there significant use of visual rhythm and repetition of elements? How is the composition balanced? Symmetrically? Asymmetrically? Do the work's various elements seem proportional, and how does the question of scale affect your perception? Does the composition seem unified or not?

Is the Rule of Thirds evident as a compositional tool? How do the elements relate to the format? How would the piece be affected if the format (landscape or portrait) were switched?

Consider the title. Does it help you interpret what you see? Can you imagine different treatments of the same subject matter that would change the way you "read" the work? What feelings does the piece evoke?

Has the artist's choice of medium played a role in the presentation of the various elements and their organization or design? Are effects achieved that are realizable only in this particular medium? If more than one medium is involved, what is their relation?

Interpret

What is the meaning of the work? What is the content, as opposed to the subject matter? What are the artist's intentions? How do these intentions manifest themselves in the composition? Are there other feelings or attitudes that the composition seems to evoke, and what specific elements or design choices account for those feelings? Are there symbolic meanings in the work? Does the work seem to have personal meaning to the artist? That is, is it biographical? Is the work a political or social commentary? Is there some larger philosophical, historical or social context that informs the work? Is there a historical style the work would fall under? If so, how does that affect the intended message?

Judge (Evaluate)

What does the work mean to you? Do you think the artist was successful in communicating the feeling or message that they intended?

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4401
Institution	ENMU-RU
Applicant(s)	jeff.frawley@enmu.edu
Status	NMHED_REVIEW
Submitted	2025-09-05 06:23 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Coda Omness

Chief Academic Officer Email
coda.omness@enmu.edu

Registrar Name
RaLynne Stanbrough

Registrar Email
ralynne.stanbrough@enmu.edu

Course's Academic Department
Language, Fine Arts, and Humanities

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
ARTS

Number
1610

Title
Drawing I

Number of credits
3

Was this course previously part of the New Mexico General Education curriculum?
No

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
ARTS

Number
1610

Title
Drawing I

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.

• Produce drawings that demonstrate techniques and mechanics of observational drawing.
• Demonstrate competency in the following practices; measuring and sighting, gesture, contour line, negative space, shape, value, space, volume, place and texture.
• Create drawings primarily from observation with black and white traditional drawing media.
• Demonstrate effective verbal or written response to one's own art and art of others.

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

None

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.

This course focuses on basic techniques and conventions of fine arts drawing. Students complete regular in-class "Laboratory" assignments that require them to study, discuss, and complete written critiques of professional drawings, while learning effective genre techniques (e.g. perspective, lines, negative space, rule of thirds). For these "Laboratory" assignments, students study, discuss, and complete written critiques of common drawing genres (e.g. still lifes, portraits, live modeling), for which they must use a theoretical lens to analyze the cultural and rhetorical purposes of these genres. For "Format and Composition" assignments, students share their own technique sketches. First, they must argue for the intended rhetorical purpose of their work. Students then use the artistic critique conventions to discuss the genre effectiveness of one another's work. This includes audience and contextual awareness, as they must practice delivering critical feedback to amateur artists. When making these critiques, students form arguments about their peers' work, and must provide evidence to substantiate. Students must complete one "Museum Report" assignment, for which they visit a local art gallery or museum. They must analyze the audience, purpose, and context of a specific piece of art via a written report. Students complete both a midterm and final exam, for which they must identify key features of drawing genres using sample artworks. For these exams, they must also provide evidence from sample artworks when completing short answer analysis questions. For an end-of-semester "Portfolio Project" assignment, students work in small groups to research and study a master artist before completing drawings in imitation of this master's style. They present their findings to and share their imitation drawings with the class, which necessitates communicating in multiple genres (orally, written, visually). When presenting their imitation drawings to the class, students must provide evidence as to how they are effectively imitating genre conventions and techniques.

Critical Thinking. Problem Setting; Evidence Acquisition; Evidence 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 assignments described above, students often delineate a problem: how to effectively transfer common drawing techniques and conventions from observed works into students' own artistic work. Through the peer critique and in-class presentations described above, students must present this problem—i.e. the features of the original they wished to transfer into their own work—and the features from their own creative work that they see as evidence that they have successfully completed this transfer. When performing discussion-based and written critiques of their classmates' work, students must delineate a problem—is the work rhetorically purposeful and artistically successful?—before then acquiring evidence from classmates' work to support their reasoning. For their in-class "Laboratory" drawing assignments, which require students to focus on 1-2 individual basic drawing techniques (e.g. chiaroscuro, cross-hatching, stippling), small groups of students design their own rubrics which they use to grade one another's creative work. This requires students to delineate a problem: what are the most important features of the given drawing technique that must be captured in the rubric? Grading one another's work then requires providing evidence in the rubric. These "Laboratory" assignments also require students to delineate a problem based on the classroom conditions and the given technique; for instance, when completing a "Laboratory" drawing assignment on basic shading and lighting techniques, students must figure out how to best stage the object of their drawing and then determine the most suitable techniques that will allow them to successfully complete the artistic objectives in these given conditions. For the "Portfolio Project" assignment, students must delineate a problem—How can I successfully replicate elements of an artwork produced by a professional artists?—and present both this problem and the features of their creative work that count as evidence to the entire class, thereby sharing their 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.

Throughout the semester, students demonstrate intercultural reasoning and competence by studying a range of artwork pieces, genres, and artists (see the "Laboratory," "Format and Composition," "Portfolio Project," and "Museum Report" assignments described above). For these assignments, students engage with a variety of personal, cultural, and social perspectives in work from around the globe. For the "Portfolio Project" assignment, students complete research on a specific artist, evaluating how cultural context and personal biography have influenced the artist's work. Through the final "Portfolio Project" presentation, students share their findings with one another, thereby elaborating upon the different personal, cultural, and social contexts that appear in artwork. Students have multiple opportunities to demonstrate effective and ethical collaboration. First, they routinely provide peer feedback on one another's creative work; doing so requires them to adhere to ethical (i.e. constructive) practices while contributing to the larger goals of the group (i.e. helping one another grow through critique). This is aided by structured in-class activities that allow students to practice and understand the moral norms of artistic critique (e.g. creating collaborative feedback rubrics, practicing with critique of professional artworks, discussing the rules of constructive critical feedback). Second, students must demonstrate ethical and effective collaboration for the "Portfolio Project" assignment, for which they work in small groups to compile research, synthesize findings, and prepare a group presentation. Students are guided through this process, better learning the norms of a successful, well-functioning student group, during in-class presentation preparation activities as well as regular "check-in" meetings with the instructor. For this assignment, group members also perform peer critiques of one another's imitation artworks, further requiring them to practice ethical collaboration and artistic critique. For the "Museum Report" assignment, students demonstrate intercultural reasoning by identifying cultural and personal perspectives in exhibition artworks, then analyzing these perspectives in a written report.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

Assessment plan is currently a work in progress

Application History

Type	username	Text	Timestamp
Submittal	jeff.frawley@enmu.edu	Submitted by jeff.frawley@enmu.edu	2025-09-05 06:23 PM (US/Mountain)
Authorization	jeff.frawley@enmu.edu	jeff.frawley@enmu.edu has authorized the application for submittal	2025-09-05 06:23 PM (US/Mountain)
Created	jeff.frawley@enmu.edu	Application started by jeff.frawley@enmu.edu	2025-09-05 05:57 PM (US/Mountain)

Portfolio Project – Master Copy

Objective

Draw a copy of one of a master artist's drawings. You are to duplicate as closely as possible each aspect of the original: the shapes, lines, value range, shadows, textures and technique.

Creative Process (Group activities)

- Select your artist (draw name at random from instructor's list)
- With your group, research your artist at the library using books and internet.
- Determine a different drawing for each team member.
- Research and record interesting and appropriate facts about the artist.
- Get Instructor's approval for the drawings before beginning the copy.
- Meet at least twice as a group to critique each other's drawing progress and to plan the presentation.

Project Development (Individually)

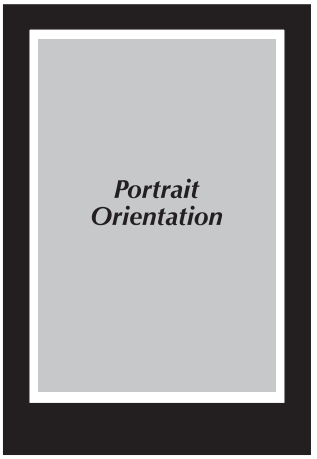
1. Scan or photocopy your selected drawing. You may want to print out enlarged details of certain areas. If you scan at a very high resolution (600-1200 dpi) then enlarging a detail will be no problem.
2. Determine the scaled up size of your Master Copy. You must keep the same proportions as the original. Tape off your drawing paper to this format.
3. Draw a grid on your scanned copy. See Grid System handout.
4. Draw a corresponding grid on your drawing paper. Keep it light enough that you can erase or cover it up as you near completion.
5. Copy the perceived shapes and lines of the original. Remember to recognize negative spaces, the range of values and the focal point.

Presentation

Each group will present their Master Copies together. Each person will discuss the title and date of their drawing, the process, successes and difficulties of making their Master Copy and at least two substantial facts about the artist.

Project Output

- Paper Size: 18″ x 24″
- Pencil (or other as appropriate to the original)
- Clean edges (taped, then removed for presentation)
- Lower left corner write the artist's name, "Master Copy of… " and the title of the piece. In the lower right corner legibly sign your name and the date.
- Mount on black mat board (not foam core) 22″ x 29″ with the extra inch at the bottom of the drawing. Cover with a tracing paper overlay.
- Also turn in, typed, your artist facts along with the title of your piece.



Due Dates

- Selection approved by instructor:
  Week Five (February 9)
- Final Presentation & Critique:
  Week Eleven (March 25)

Project Grading Rubric

• Facts are interesting & appropriate, at least two per team member	10%
• Demonstrate craftsmanship & neatness	10%
• Demonstrate a full range of values	20%
• Accurately copied shapes and other elements of the original	50%
• Participation in group activities (peer assessment); Presentation of project to class	10%
Total possible	100%

Portfolio Project – Master Copy

Objective

Draw a copy of one of a master artist's drawings. You are to duplicate as closely as possible each aspect of the original: the shapes, lines, value range, shadows, textures and technique.

Creative Process (Group activities)

- Select your artist (draw name at random from instructor's list)
- With your group, research your artist at the library using books and internet.
- Determine a different drawing for each team member.
- Research and record interesting and appropriate facts about the artist.
- Get Instructor's approval for the drawings before beginning the copy.
- Meet at least twice as a group to critique each other's drawing progress and to plan the presentation.

Project Development (Individually)

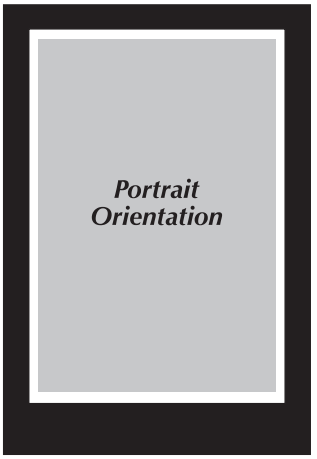
1. Scan or photocopy your selected drawing. You may want to print out enlarged details of certain areas. If you scan at a very high resolution (600-1200 dpi) then enlarging a detail will be no problem.
2. Determine the scaled up size of your Master Copy. You must keep the same proportions as the original. Tape off your drawing paper to this format.
3. Draw a grid on your scanned copy. See Grid System handout.
4. Draw a corresponding grid on your drawing paper. Keep it light enough that you can erase or cover it up as you near completion.
5. Copy the perceived shapes and lines of the original. Remember to recognize negative spaces, the range of values and the focal point.

Presentation

Each group will present their Master Copies together. Each person will discuss the title and date of their drawing, the process, successes and difficulties of making their Master Copy and at least two substantial facts about the artist.

Project Output

- Paper Size: 18″ x 24″
- Pencil (or other as appropriate to the original)
- Clean edges (taped, then removed for presentation)
- Lower left corner write the artist's name, "Master Copy of… " and the title of the piece. In the lower right corner legibly sign your name and the date.
- Mount on black mat board (not foam core) 22″ x 29″ with the extra inch at the bottom of the drawing. Cover with a tracing paper overlay.
- Also turn in, typed, your artist facts along with the title of your piece.



Due Dates

- Selection approved by instructor:
  Week Five (February 9)
- Final Presentation & Critique:
  Week Eleven (March 25)

Project Grading Rubric

• Facts are interesting & appropriate, at least two per team member	10%
• Demonstrate craftsmanship & neatness	10%
• Demonstrate a full range of values	20%
• Accurately copied shapes and other elements of the original	50%
• Participation in group activities (peer assessment); Presentation of project to class	10%
Total possible	100%

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4101
Institution	UNM-MAIN
Applicant(s)	mraine@unm.edu, pcheek@unm.edu
Status	NMHED_REVIEW
Submitted	2025-06-16 09:33 AM (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
Registrar

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)?
Yes

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.

Students will be able to:

Differentiate between historical and contemporary approaches to Landscape Architecture design and their impacts on the practice of landscape architecture
Express the roles that analysis of social, cultural and climatological issues play in Landscape Architecture design.
Identify and discuss modes and means of Landscape Architecture and evaluate their value as communication tools.
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.
Describe shared ethical responsibilities or moral norms among members of a group. Explain ethical issues or propose solutions based on ethical perspectives or theories.
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).
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).
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).
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
Explain a range of personal, social, cultural, or social justice issues as they relate to one's own or others' perspectives.
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.

1. Differentiate between historical and contemporary approaches to Landscape Architecture design and their impacts on the practice.
2. Express the roles that analysis of social, cultural and climatological issues play in Landscape Architecture design.
3. Identify and discuss modes and means of Landscape Architecture and evaluate their value as communication tools.

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

1. Genre and Medium Awareness, Application, and Versatility: 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).
2. Strategies for Understanding and Evaluating Messages: 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).
3. Strategies for Understanding and Evaluating Messages: 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

---

Critical Thinking. Problem Setting; Evidence Acquisition; Evidence 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: Delineate a problem or question. Students state problem/question appropriate to the context.
2. Evidence Acquisition: Identify and gather the information/data necessary to address the problem or question.
3. Evidence Evaluation: Evaluate evidence/data for credibility (e.g. bias, reliability, and validity), probable truth, and relevance to a situation.
4. Reasoning/Conclusions: Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation.

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: Explain a range of personal, social, cultural, or social justice issues as they relate to one's own or others' perspectives.
2. Sustainability and the natural and human worlds: 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.
3. 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.
4. Collaboration skills, teamwork and value systems: Demonstrate effective and ethical collaboration in support of meeting identified group goals. (Accountability is implied with "ethical.")
5. Collaboration skills, teamwork and value systems: Explain and support one's own position on specific local or global issues while recognizing that there may be multiple valid perspectives

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

http://assessment.unm.edu/

Application History

Type	username	Text	Timestamp
Submittal	mraine@unm.edu	Submitted by mraine@unm.edu	2025-06-16 09:33 AM (US/Mountain)
Authorization	mraine@unm.edu	mraine@unm.edu has added pcheek@unm.edu to the application	2025-06-16 09:33 AM (US/Mountain)
Authorization	mraine@unm.edu	mraine@unm.edu has authorized the application for submittal	2025-06-16 09:33 AM (US/Mountain)
Created	mraine@unm.edu	Application started by mraine@unm.edu	2025-06-16 09:28 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 FSCC.

1. Contact Information

Name: Katya Crawford	
Title: Chair, Department of Landscape Architecture	
Phone: 505 379 0772	
Email: katyac@unm.edu	

2. Institutional Course Information

Prefix: LA	
Number: XXXX	
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 one) See gened.unm.edu and http://assessment.unm.edu/assessment-types/gened-assessment/essential-skills.html for information about content areas	1. Communication 2. Mathematics and Statistics 3. Physical and Natural Sciences 4. Social and Behavioral Sciences 5. Humanities 6. Arts and Design X 7. Second Language

3. Student Learning Outcomes

List all common course student learning outcomes for the course.

Arts and Design Common Course SLOs

Communication

1. Genre and Medium Awareness, Application, and Versatility: 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).
2. Strategies for Understanding and Evaluating Messages: 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).
3. Strategies for Understanding and Evaluating Messages: 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 a major citation system such as MLA and APA).

Critical Thinking:

1. Problem Setting: Delineate a problem or question. Students state problem/question appropriate to the context.
2. Evidence Acquisition: Identify and gather the information/data necessary to address the problem or question.
3. Evidence Evaluation: Evaluate evidence/data for credibility (e.g. bias, reliability, and validity), probable truth, and relevance to a situation.
4. Reasoning/Conclusions: Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation.

Personal and Social Responsibility

1. 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.

2. Sustainability and the natural and human worlds: 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.

3. 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.

4. Collaboration skills, teamwork and value systems: Demonstrate effective and ethical collaboration in support of meeting identified group goals. (Accountability is implied with "ethical.")

5. Collaboration skills, teamwork and value systems: Explain and support one's own position on specific local or global issues while recognizing that there may be multiple valid perspectives

Institution-specific Student Learning Outcomes

1. Differentiate between historical and contemporary approaches to Landscape Architecture design and their impacts on the practice.

2. Express the roles that analysis of social, cultural and climatological issues play in Landscape Architecture design.

3. Identify and discuss modes and means of Landscape Architecture and evaluate their value as communication tools.

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?

This course will benefit UNM students by introducing them to the field of landscape architecture. "Landscape architecture encompasses the analysis, planning, design, management, and stewardship of the natural and built environment through science and design." American Society of Landscape Architecture, 2013. An Introduction to Landscape Architecture provides a general education in the way the world is built. Students become aware of the design of urban and rural spaces, how infrastructures influence resource distribution, and the general processes by which the ecologies and environments they live in are affected and interact with human inhabitation. Students learn communication skills, personal and social responsibility, and critical thinking as they learn to analyze and express ideas about the world around them in all its beauty and devastation. Students will discuss political and cultural norms which affect the landscapes we live in, and the processes by which design intersects with these norms.

Why does it belong in the General Education Program?

The Introduction to Landscape Architecture is one of the best broad based humanist educational experiences available. The discipline addresses beauty, practicality, and poetry through understanding place, culture, and ecology. As students move through the semester, their ability to understand place as a process and activity gives them the ability to see themselves as agents in the world. They develop opinions and knowledge about fundamental aspects of the world they inhabit and empathy and understanding of the other humans and non-humans who inhabit it with them.

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

The Architecture Department currently offers ARCH 1120 which is specific to the "elements, principles, and theories of architecture through their social, historical, and technical determinants. The course seeks to lay a foundation in architectural studies…" The Architecture department is in support of Intro to Landscape Architecture also being offered as a GE 7 Arts and Design, as our subject matter is ecological and landscape design.

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)

Intro to Landscape Architecture: 21st Century Superhero is *"of broad and tangible interest and intellectual benefit to many students."* The course looks at contemporary issues such as biodiversity loss, climate change mitigation and adaptation, and cultural and social polarization through a lens of place, beauty and ecology.

Intro to Landscape Architecture: 21st Century Superhero provides "*student learning outcomes related to knowledge, understanding, or skills in the liberal arts."* Students will learn skills in reading, writing, diagramming, critical thinking, presentation and communication, as well as appreciation of history and beauty of the built and unbuilt environment.

Intro to Landscape Architecture: 21st Century Superhero is "d*esigned to introduce students to habits of mind, theories, concepts and methods in a field or area"* In an open format with readings, seminar style questioning and informative lectures by experts and faculty this course will open the subject matter of the land, our attachments to it, design, and the cultural and social effects and determinants of the built environment. Students will respond with writing, diagramming, early exercises in design, and oral presentations.

Intro to Landscape Architecture: 21st Century Superhero is "*appropriate for a research university"* as students engage in learning through primary and secondary sources, read and write in both analytical and expository styles, and generate their own responses to a variety of materials, from lecture to reading to hands on learning.

Intro to Landscape Architecture: 21st Century Superhero is "*characterized by an inclusive pedagogy"* including, but not limited to readings by and about black and indigenous landscapes,

with emphasis on women and under-represented populations as designers. Our pedagogy is rooted in the student experience project and includes student centered learning.

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

This is a new course. Projected enrollments are 10 students in the first year and 50 by year three.

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

We look forward to the assessment tool of collecting student artifacts and sharing the outcomes through the artifact collection. As designers, we specialize in designing project prompts that ask a student to create something in response to complex ideas that may cover ecologies, climate, ephemera, stormwater, cultural practices, or a variety of other factors in the built environment.

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

Faculty Load

This course is being added as part of a new BLA degree and will require only the resources embedded in that new faculty load request. The BLA degree will hire one new FTE and three TPTs to deliver the new courses. However, this course will be taught by existing faculty.

Budget Impact

No new faculty and staff budget will be needed. other than the existing resources at the School of Architecture and Planning and through the Center for Teaching Excellence and other existing UNM resources (Advance, etc.)

The school currently has a computer lab and a fabrications lab. While we are experiencing some growing pains in the labs and studio spaces, measures are being taken to address existing and projected need. All incoming students in architecture and landscape architecture are required to own a laptop. The software most used in the design fields is free to UNM students (AutoCAD, The Adobe Creative Suite, GIS and Rhino).

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

SCHOOL OF ARCHITECTURE & PLANNING

School of Architecture and Planning
MSC04 2530, 1 University of New Mexico
Albuquerque, New Mexico, 87131-0001, (505) 277-2903

October 19, 2023

Memorandum:

To: UNM General Education and New Mexico Curriculum & Articulation Committee

From: Dean Robert González, School of Architecture & Planning, University of New Mexico

The Dean's Office of the School of Architecture & Planning supports the application of the Department of Landscape Architecture for the new Introduction to Landscape Architecture to be listed as a General Education VII (Arts and Design) course. We commit to supporting this course for the foreseeable five-year future as this will provide campus-wide exposure to landscape architecture, one of our three key disciplines in our school.

We currently have two GE courses in Architecture and look forward to offering a third in Landscape Architecture. These introductory courses offer a wealth of information about how the world works and the poetics of place.

Thank you for your consideration of this matter.

best,

Robert Alexander González, Ph.D., A.I.A.
Professor of Architecture and Dean of the School of Architecture + Planning

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

INTRODUCTION TO LANDSCAPE ARCHITECTURE | LA XXX

University of New Mexico Department of Landscape Architecture
Mondays, January XX to May XX, X:00 - X:00 AM
George Pearl Hall, Room XXX
Instructor: First Last
Contact: email@unm.edu
Office Hours: Friday X:00 – X:00 or by appointment

Land Acknowledgement: Founded in 1889, the University of New Mexico sits on the traditional homelands of the Pueblo of Sandia. The original peoples of New Mexico Pueblo, Navajo, and Apache since time immemorial, have deep connections to the land and have made significant contributions to the broader community statewide. We honor the land itself and those who remain stewards of this land throughout the generations and also acknowledge our committed relationship to Indigenous peoples. We gratefully recognize our history.

Course Description

Landscape Architecture: 21st Century Superhero. 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.

Course Objectives

1. Familiarize students with the varied areas of Landscape Architecture practice.
2. Introduce historical and contemporary areas of Landscape Architecture theory.
3. Explore important social, cultural, ecological, topological and climatological issues closely connected with the practice.
4. Explore examples of Landscape Architecture representation and their role in communicating ideas to clients and communities.

Learning Outcomes

Students will be able to:

1. Differentiate between historical and contemporary approaches to Landscape Architecture design and their impacts on the practice of landscape architecture
2. Express the roles that analysis of social, cultural and climatological issues play in Landscape Architecture design.
3. Identify and discuss modes and means of Landscape Architecture and evaluate their value as communication tools.
4. 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.

5. Describe shared ethical responsibilities or moral norms among members of a group. Explain ethical issues or propose solutions based on ethical perspectives or theories.
6. 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).
7. 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).
8. 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).
9. Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation.
10. Explain and support one's own position on specific local or global issues while recognizing that there may be multiple valid perspectives
11. Explain a range of personal, social, cultural, or social justice issues as they relate to one's own or others' perspectives.
12. Delineate a problem or question. Students state problem/question appropriate to the context.
13. Identify and gather the information/data necessary to address the problem or question.

Credit-Hour Statement

This is a three credit-hour course. Class meets for three 50-minute sessions of direct instruction for fifteen weeks during the Spring 20XX semester. Please plan for a minimum of six hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

Grading

Final grades will be based on the following:

Bio and Climate Research: 25%
Papers and Essays: 25%
Summary Portfolio: 40%
Participation: 10%

General Criteria for Evaluation

1. Do essays, exercises and research effectively summarize and accurately represent the material reviewed and do they reflect a thoughtful critique or response to the assignment material? Is the writing of sufficient quality (spell checked, proper grammar, concise, correctly attributed)?
2. Does the student actively participate in class discussion, reflecting an engagement with the weekly readings?

3. Do the student's presentation reflect a sufficient level of engagement with the topics including review of appropriate materials, accurate summary and throughtful critique? Did the student produce quality work and exhibit professionalism?
4. Does the student's portfolio of diagrams and writing reflect continued engagement and care?

Grading Scale:

A+: 100+	A: 93-100	A- 89-93
B+: 87-89	B: 83-86	B-: 80-82
C+: 77-79	C: 73-76	C-:70-72
D+: 65-69	D: 60-64	F: Below 60

Letter grades (and their numerical equivalents) should be interpreted as follows:

A=excellent, superior; exemplary; greatly exceeds satisfactory standards. The student is a self-starter and routinely takes initiative, does outside research, develops work through multiple and complex iterations, generates thoughtful and innovative solutions, and carries work to a high level of finish, going well beyond assigned elements.
B= very good, thorough; exceeds satisfactory standards. Student shows consistent progress in the studio, does some outside research, develops work through multiple iterations, generates good workable solutions, and always carries work to full completion, going beyond requirements and assigned elements.
C=acceptable, perfunctory; meets satisfactory standards. Student completes all assigned work, but with little evidence of taking initiative or going beyond minimum assignments. Shows inconsistent progress, does little outside research, does some iterations. The lowest grade a graduate student can acquire and receive credit for the studio.
D=marginal; somewhat below satisfactory standards. Lack of steady performance of assigned work. Student does not complete all work assigned, shows little initiative, does not do outside research, does minimal iterations, and lacks consistency in meeting minimum requirements and including assigned elements. (only applies to undergraduate students)
F=unacceptable; does not meet satisfactory standards. Serious deficiency in meeting satisfactory standards and performing assigned work. Student shows no initiative, does not do outside research, does not develop evidence of iteration, generates inappropriate solutions, shows little or no care in finished work, and is missing assigned elements.
I=Incomplete. Awarded only in special, extreme circumstances, by advance arrangement with instructors, and only when circumstances beyond the student's control of the student prevent successful and timely completion of studio work assigned. It is not available as a last-minute option for students unable or unwilling to complete work as assigned.

COURSE SCHEDULE

The course schedule is subject to change. Minor changes will be announced in class, major ones provided in writing.

Week One
Introduction. Overview of Landscape Architecture
Weekly Reading #1
Week Two
A Complete History of Landscape Architecture (Abridged) – Landscapes Through TIme
Weekly Readings #2 & #3

Weeks Three and Four
The Urbanized Landscape
History of Landscape Paper Draft
Weeks Five and Six
Defining Landscape Architecture
Weekly Readings #4 & #5 / History of Landscape Paper Final / Landscape Architect Bio Draft
Weeks Seven and Eight
Landscape Conservation and Planning
Weekly Reading #6 / Landscape Architect Bio Final / Conservation Research Essay Draft
Week Nine
Global Influences
Weekly Reading #7 / International Landscape Design Collage
Weeks Ten and Eleven
Resilience, Sustainability and Climate Adaptation
Weekly Reading #8 / Conservation Research Essay Final / Site Visit Sketches Draft
Weeks Twelve and Thirteen
The Process of Design and the Art of Problem Solving
Weekly Reading #9 / Design Process Diagram and Essay / Site Visit Sketches Final
Weeks Fourteen and Fifteen
Areas of Practice and Fields of Collaboration
Summary Portfolio

Accommodations Statement:
Accommodations: 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 Accessibility Resource Center at arcsrvs@unm.edu or by phone at 505-277-3506.

Support: Contact me at [ ] or in office/check-in hours and contact Accessibility Resource Center (https://arc.unm.edu/) at arcsrvs@unm.edu (505) 277-3506.

Other Health, Wellness, Legal and Quality of Life issues:

COVID-19 Health and Awareness. UNM is a mask friendly, but not a mask required, community. To be registered or employed at UNM, Students, faculty, and staff must all meet UNM's Administrative Mandate on Required COVID-19 vaccination. If you are experiencing COVID-19 symptoms, please do not come to class. If you have a positive COVID-19 test, please stay home for five days and isolate yourself from others, per the Centers for Disease Control (CDC) guidelines. If you do need to stay home, please communicate with me at [ ]; I can work with you to provide alternatives for course participation and completion. UNM faculty and staff know that these are challenging times. Please let me, an advisor, or another UNM staff member know that you need support so that we can connect you to the right resources. Please be aware that UNM will publish information on websites and email about any changes to our public health status and community response.

Student Health and Counseling (SHAC) at (505) 277-3136. If you are having active respiratory symptoms (e.g., fever, cough, sore throat, etc.) AND need testing for COVID-19; OR If you recently tested positive and may need oral treatment, call SHAC. SHAC also may offer vaccines and flu shots depending on seasonal availability.

LoboRESPECT Advocacy Center (505) 277-2911 can offer help with contacting faculty and managing challenges that impact your UNM experience.

Title IX:
Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus. Please note that, because UNM faculty, TAs, and GAs are considered "responsible employees" any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct and reporting, please see: https://policy.unm.edu/university-policies/2000/2740.html. LoboRESPECT Advocacy Center, the Women's Resource Center, and the LGBTQ Resource Center all offer confidential services.

Citizenship and/or Immigration Status: All students are welcome in this class regardless of citizenship, residency, or immigration status. Your professor will respect your privacy if you choose to disclose your status. As for all students in the class, family emergency-related absences are normally excused with reasonable notice to the professor, as noted in the attendance guidelines above. UNM as an institution has made a core commitment to the success of all our students, including members of our undocumented community. The Administration's welcome is found on our website: http://undocumented.unm.edu/.

Respectful and Responsible Learning: We all have shared responsibility for ensuring that learning occurs safely, honestly, and equitably. Submitting material as your own work that has been generated on a website, in a publication, by an artificial intelligence algorithm, by another person, or by breaking the rules of an assignment constitutes academic dishonesty. It is a student code of conduct violation that can lead to a disciplinary procedure. *Please ask me for help in finding the resources you need to be successful in this course. I can help you use study resources responsibly and effectively.* Off-campus paper writing services, problem-checkers and services, websites, and AIs can be incorrect or misleading. Learning the course material depends on completing and submitting your own work. UNM preserves and protects the integrity of the academic community through multiple policies including policies on student grievances (Faculty Handbook D175 and D176), academic dishonesty (FH D100), and respectful campus (FH C09). These are in the *Student Pathfinder* (https://pathfinder.unm.edu) and the *Faculty Handbook* (https://handbook.unm.edu).

Connecting to Campus and Finding Support: UNM has many resources and centers to help you thrive, including opportunities to get involved, mental health resources, academic support including tutoring, resource centers for people like you, free food at Lobo Food Pantry, and jobs on campus. Your advisor, staff at the resource centers and Dean of Students, and I can help you find the right opportunities for you.

Course Bibliography:
Boults, Elizabeth, and Chip Sullivan. 2010. Illustrated History of Landscape Design. Hoboken, N.J.: John Wiley & Sons.
Henderson, Ron. *30 Trees: And Why Landscape Architects Love Them*, Birkhäuser, 2024.
Thoren, Roxi. Landscapes of Change: Innovative Designs for Reinvented Sites. United Kingdom: Timber Press, 2014.

Back Frédéric, Jean Giono, and Canadian Broadcasting Corporation, dirs. 1987. The Man Who Planted Trees. Société Radio-Canada.

The following rubric of UNM general eduation 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. *Of broad and tangible interest and intellectual benefit to many students.* 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. *Defined by student learning outcomes related to knowledge, understanding, or skills in the liberal arts.* 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. *Designed to introduce students to habits of mind, theories, concepts and methods in a field or area* Provides modes of thinking and learning that contribute to exploration and satisfaction in career, life, or community endeavors.	
4. *Appropriate for a research university* 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. *Characterized by an inclusive pedagogy* 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	
2. MATHEMATICS & STATISTICS		
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	
3. PHYSICAL AND NATURAL SCIENCES		
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): 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	
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): 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	
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): 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): 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 scholary 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.* 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):

Critical Thinking

Intro to Landscape Architecture: 21st Century Superhero develops critical thinking skills by having students read and analyze texts about landscape architecture and then write about the readings and the landscapes they study.

The course presents challenges for landscape architecture including climate change, biodiversity loss, pollinator habitat loss, air pollution, heat islands and other effects of political and social systems that affect the landscape. Students evaluate evidence/data for credibility for each topic and then develop conclusions and propose solutions using their reading and learning from lectures and presentations to substantiate their claims. The course engages with the solutions available in the landscape in lecture, reading, and case study format.

Students are encouraged to think critically about the systems that create these issues and to propose and think through the ramifications of possible solutions at local and systems scales. Students are assigned visual diagram assignments which allow them to visualize the larger

systems they are learning about. In these diagramming projects, students learn to use scale, texture, color, tone, and line to articulate the influences of these policies and concepts on the physical world around them.

Students are offered opportunities to look through worldviews not their own so they can identify inherent bias in the design of the built environment, such as bias towards able bodies or towards younger people with full mobility.

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

Communications:

Students learn to communicate in oral, written and digital mediums. In their discussion group presentation students speak aloud about a project they have researched and present key elements of the project. In their written responses to readings, students learn to use language clearly and succinctly to articulate their knowledge obtained through the reading.
Students apply strategies such as reading for main points; seeking key arguments, counterarguments, and rebuttals; locating supportive documentation for arguments; reading with a specific stakeholder lens; applying a theoretical lens (e.g. cultural, political, economic) to present to the group and through their written work, their evaluation of the content presented. They also are responsible to create language in writing and in speaking that communicates those evaluations in appropriate manner for the audience. They are also taught to distinguish among authors who support their claims with evidence and those who are engaging in theoretical discussion without support from citations. They apply these skills to their own writing. Students write response papers which require citations in Chicago format, including in text citations and end references. Students are taught correct use of quotations and paraphrase and citations for these references. This sample assignment description illustrates this requirement and learning outcome. “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.” (see sample project included below)

Landscape Architecture requires the communication of ideas from concept inception to building documents. Intro to Landscape Architecture teaches about this process and shows examples of the process of this communication from idea sketch to built work. Students develop presentation skills, writing skills, and diagramming skills through their own participation in class as well as learning about the complex process of client designer builder communication.

Contemporary landscape architecture is also a community engagement process. This course shows students how community engagement works and how community input can help to develop designs that answer community questions about belonging, safety, beauty, and meaning. This level of communication is crucial to public projects and helps students develop an understanding of the pathways from idea to landscape.

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

Personal and Social Responsibility:

Intro to Landscape Architecture: 21st Century Superhero provides students with a framework for understanding social, cultural and social justice issues through the lens of landscape and urban design, developing intercultural reasoning and competencies. Students will learn the narratives of how landscapes come to be, what are the policy and political agents that form landscapes, as well as the designers and inspirations for the forms and functions of a landscape. Students are encouraged to develop their own questions about landscapes and their social and cultural contexts. Assignments, lectures and discussions encourage personal engagement with the questions of place and design.

Landscape architecture is uniquely positioned to offer students the ability to "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." This is the territory of designing the living world around us. This course is the introduction to future studios in ecological design methods and designs for non-humans. The course is set up to ask students to engage with the built world from the perspective of its impacts and how it interacts with eco system services and other frameworks for valuing and respecting ecosystems.

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

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

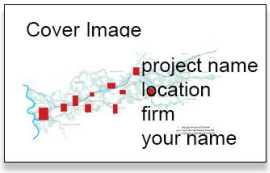
List of Landscape Architecture Firms:

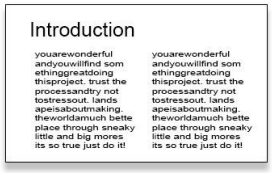
Agence Ter
Altelier Scale
Andreas Kipar (LAND)
Aniket Bhagwat
Aspect Studios
Balmori Associates
D.I.R.T
Field Operations
Gilles Clement
Gustafson Porter + Bowman
Hill Works
Hood Design Studio
Karres + Brans
Latz + Partner
Leonard Grosch (LOIDL)
Martí Franch (EMF)
SINAI
Scape
Stig L. Andersson (SLA)
STOSS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

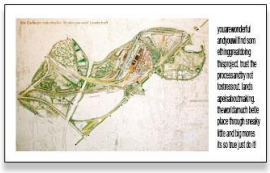
List of questions to inform your research. Please add 3 of your own to this list:

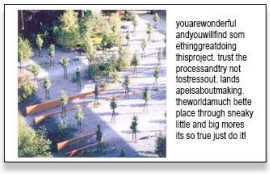
1. How does the project address issues of environmental sustainability?
2. Does the project consider clients other than humans?
3. Does the project address social justice issues?
4. How is the project engaged with and by what communities in different seasons?
5. What are the successes of the project?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

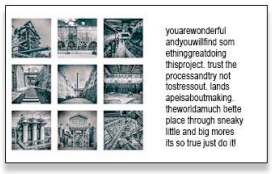
Please download and review the InDesign Template from Canvas.
Sneak peak:











Have fun on your adventure!

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: Katya Crawford	
Title: Chair, Department of Landscape Architecture	
Phone: 505 379 0772	
Email: katyac@unm.edu	

2. Institutional Course Information

Prefix: LA	
Number: XXXX	
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 one) See gened.unm.edu and http://assessment.unm.edu/assessment-types/gened-assessment/essential-skills.html for information about content areas	1. Communication 2. Mathematics and Statistics 3. Physical and Natural Sciences 4. Social and Behavioral Sciences 5. Humanities 6. Arts and Design X 7. Second Language

3. Student Learning Outcomes

List all common course student learning outcomes for the course.

Arts and Design Common Course SLOs

Communication

1. Genre and Medium Awareness, Application, and Versatility: 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).
2. Strategies for Understanding and Evaluating Messages: 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).
3. Strategies for Understanding and Evaluating Messages: 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 a major citation system such as MLA and APA).

Critical Thinking:

1. Problem Setting: Delineate a problem or question. Students state problem/question appropriate to the context.
2. Evidence Acquisition: Identify and gather the information/data necessary to address the problem or question.
3. Evidence Evaluation: Evaluate evidence/data for credibility (e.g. bias, reliability, and validity), probable truth, and relevance to a situation.
4. Reasoning/Conclusions: Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation.

Personal and Social Responsibility

1. 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.

2. Sustainability and the natural and human worlds: 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.

3. 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.

4. Collaboration skills, teamwork and value systems: Demonstrate effective and ethical collaboration in support of meeting identified group goals. (Accountability is implied with "ethical.")

5. Collaboration skills, teamwork and value systems: Explain and support one's own position on specific local or global issues while recognizing that there may be multiple valid perspectives

Institution-specific Student Learning Outcomes

1. Differentiate between historical and contemporary approaches to Landscape Architecture design and their impacts on the practice.

2. Express the roles that analysis of social, cultural and climatological issues play in Landscape Architecture design.

3. Identify and discuss modes and means of Landscape Architecture and evaluate their value as communication tools.

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?

This course will benefit UNM students by introducing them to the field of landscape architecture. "Landscape architecture encompasses the analysis, planning, design, management, and stewardship of the natural and built environment through science and design." American Society of Landscape Architecture, 2013. An Introduction to Landscape Architecture provides a general education in the way the world is built. Students become aware of the design of urban and rural spaces, how infrastructures influence resource distribution, and the general processes by which the ecologies and environments they live in are affected and interact with human inhabitation. Students learn communication skills, personal and social responsibility, and critical thinking as they learn to analyze and express ideas about the world around them in all its beauty and devastation. Students will discuss political and cultural norms which affect the landscapes we live in, and the processes by which design intersects with these norms.

Why does it belong in the General Education Program?

The Introduction to Landscape Architecture is one of the best broad based humanist educational experiences available. The discipline addresses beauty, practicality, and poetry through understanding place, culture, and ecology. As students move through the semester, their ability to understand place as a process and activity gives them the ability to see themselves as agents in the world. They develop opinions and knowledge about fundamental aspects of the world they inhabit and empathy and understanding of the other humans and non-humans who inhabit it with them.

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

The Architecture Department currently offers ARCH 1120 which is specific to the "elements, principles, and theories of architecture through their social, historical, and technical determinants. The course seeks to lay a foundation in architectural studies…" The Architecture department is in support of Intro to Landscape Architecture also being offered as a GE 7 Arts and Design, as our subject matter is ecological and landscape design.

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)

Intro to Landscape Architecture: 21st Century Superhero is *"of broad and tangible interest and intellectual benefit to many students."* The course looks at contemporary issues such as biodiversity loss, climate change mitigation and adaptation, and cultural and social polarization through a lens of place, beauty and ecology.

Intro to Landscape Architecture: 21st Century Superhero provides "*student learning outcomes related to knowledge, understanding, or skills in the liberal arts."* Students will learn skills in reading, writing, diagramming, critical thinking, presentation and communication, as well as appreciation of history and beauty of the built and unbuilt environment.

Intro to Landscape Architecture: 21st Century Superhero is "d*esigned to introduce students to habits of mind, theories, concepts and methods in a field or area"* In an open format with readings, seminar style questioning and informative lectures by experts and faculty this course will open the subject matter of the land, our attachments to it, design, and the cultural and social effects and determinants of the built environment. Students will respond with writing, diagramming, early exercises in design, and oral presentations.

Intro to Landscape Architecture: 21st Century Superhero is "*appropriate for a research university"* as students engage in learning through primary and secondary sources, read and write in both analytical and expository styles, and generate their own responses to a variety of materials, from lecture to reading to hands on learning.

Intro to Landscape Architecture: 21st Century Superhero is "*characterized by an inclusive pedagogy"* including, but not limited to readings by and about black and indigenous landscapes,

with emphasis on women and under-represented populations as designers. Our pedagogy is rooted in the student experience project and includes student centered learning.

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

This is a new course. Projected enrollments are 10 students in the first year and 50 by year three.

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

We look forward to the assessment tool of collecting student artifacts and sharing the outcomes through the artifact collection. As designers, we specialize in designing project prompts that ask a student to create something in response to complex ideas that may cover ecologies, climate, ephemera, stormwater, cultural practices, or a variety of other factors in the built environment.

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

Faculty Load

This course is being added as part of a new BLA degree and will require only the resources embedded in that new faculty load request. The BLA degree will hire one new FTE and three TPTs to deliver the new courses. However, this course will be taught by existing faculty.

Budget Impact

No new faculty and staff budget will be needed. other than the existing resources at the School of Architecture and Planning and through the Center for Teaching Excellence and other existing UNM resources (Advance, etc.)

The school currently has a computer lab and a fabrications lab. While we are experiencing some growing pains in the labs and studio spaces, measures are being taken to address existing and projected need. All incoming students in architecture and landscape architecture are required to own a laptop. The software most used in the design fields is free to UNM students (AutoCAD, The Adobe Creative Suite, GIS and Rhino).

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

SCHOOL OF ARCHITECTURE & PLANNING

School of Architecture and Planning
MSC04 2530, 1 University of New Mexico
Albuquerque, New Mexico, 87131-0001, (505) 277-2903

October 19, 2023

Memorandum:

To: UNM General Education and New Mexico Curriculum & Articulation Committee

From: Dean Robert González, School of Architecture & Planning, University of New Mexico

The Dean's Office of the School of Architecture & Planning supports the application of the Department of Landscape Architecture for the new Introduction to Landscape Architecture to be listed as a General Education VII (Arts and Design) course. We commit to supporting this course for the foreseeable five-year future as this will provide campus-wide exposure to landscape architecture, one of our three key disciplines in our school.

We currently have two GE courses in Architecture and look forward to offering a third in Landscape Architecture. These introductory courses offer a wealth of information about how the world works and the poetics of place.

Thank you for your consideration of this matter.

best,

Robert Alexander González, Ph.D., A.I.A.
Professor of Architecture and Dean of the School of Architecture + Planning

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

INTRODUCTION TO LANDSCAPE ARCHITECTURE | LA XXX

University of New Mexico Department of Landscape Architecture
Mondays, January XX to May XX, X:00 - X:00 AM
George Pearl Hall, Room XXX
Instructor: First Last
Contact: email@unm.edu
Office Hours: Friday X:00 – X:00 or by appointment

Land Acknowledgement: Founded in 1889, the University of New Mexico sits on the traditional homelands of the Pueblo of Sandia. The original peoples of New Mexico Pueblo, Navajo, and Apache since time immemorial, have deep connections to the land and have made significant contributions to the broader community statewide. We honor the land itself and those who remain stewards of this land throughout the generations and also acknowledge our committed relationship to Indigenous peoples. We gratefully recognize our history.

Course Description

Landscape Architecture: 21st Century Superhero. 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.

Course Objectives

1. Familiarize students with the varied areas of Landscape Architecture practice.
2. Introduce historical and contemporary areas of Landscape Architecture theory.
3. Explore important social, cultural, ecological, topological and climatological issues closely connected with the practice.
4. Explore examples of Landscape Architecture representation and their role in communicating ideas to clients and communities.

Learning Outcomes

Students will be able to:

1. Differentiate between historical and contemporary approaches to Landscape Architecture design and their impacts on the practice of landscape architecture
2. Express the roles that analysis of social, cultural and climatological issues play in Landscape Architecture design.
3. Identify and discuss modes and means of Landscape Architecture and evaluate their value as communication tools.
4. 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.

5. Describe shared ethical responsibilities or moral norms among members of a group. Explain ethical issues or propose solutions based on ethical perspectives or theories.
6. 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).
7. 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).
8. 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).
9. Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation.
10. Explain and support one's own position on specific local or global issues while recognizing that there may be multiple valid perspectives
11. Explain a range of personal, social, cultural, or social justice issues as they relate to one's own or others' perspectives.
12. Delineate a problem or question. Students state problem/question appropriate to the context.
13. Identify and gather the information/data necessary to address the problem or question.

Credit-Hour Statement

This is a three credit-hour course. Class meets for three 50-minute sessions of direct instruction for fifteen weeks during the Spring 20XX semester. Please plan for a minimum of six hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

Grading

Final grades will be based on the following:

Bio and Climate Research: 25%
Papers and Essays: 25%
Summary Portfolio: 40%
Participation: 10%

General Criteria for Evaluation

1. Do essays, exercises and research effectively summarize and accurately represent the material reviewed and do they reflect a thoughtful critique or response to the assignment material? Is the writing of sufficient quality (spell checked, proper grammar, concise, correctly attributed)?
2. Does the student actively participate in class discussion, reflecting an engagement with the weekly readings?

3. Do the student's presentation reflect a sufficient level of engagement with the topics including review of appropriate materials, accurate summary and throughtful critique? Did the student produce quality work and exhibit professionalism?
4. Does the student's portfolio of diagrams and writing reflect continued engagement and care?

Grading Scale:

A+: 100+	A: 93-100	A- 89-93
B+: 87-89	B: 83-86	B-: 80-82
C+: 77-79	C: 73-76	C-:70-72
D+: 65-69	D: 60-64	F: Below 60

Letter grades (and their numerical equivalents) should be interpreted as follows:

A=excellent, superior; exemplary; greatly exceeds satisfactory standards. The student is a self-starter and routinely takes initiative, does outside research, develops work through multiple and complex iterations, generates thoughtful and innovative solutions, and carries work to a high level of finish, going well beyond assigned elements.
B= very good, thorough; exceeds satisfactory standards. Student shows consistent progress in the studio, does some outside research, develops work through multiple iterations, generates good workable solutions, and always carries work to full completion, going beyond requirements and assigned elements.
C=acceptable, perfunctory; meets satisfactory standards. Student completes all assigned work, but with little evidence of taking initiative or going beyond minimum assignments. Shows inconsistent progress, does little outside research, does some iterations. The lowest grade a graduate student can acquire and receive credit for the studio.
D=marginal; somewhat below satisfactory standards. Lack of steady performance of assigned work. Student does not complete all work assigned, shows little initiative, does not do outside research, does minimal iterations, and lacks consistency in meeting minimum requirements and including assigned elements. (only applies to undergraduate students)
F=unacceptable; does not meet satisfactory standards. Serious deficiency in meeting satisfactory standards and performing assigned work. Student shows no initiative, does not do outside research, does not develop evidence of iteration, generates inappropriate solutions, shows little or no care in finished work, and is missing assigned elements.
I=Incomplete. Awarded only in special, extreme circumstances, by advance arrangement with instructors, and only when circumstances beyond the student's control of the student prevent successful and timely completion of studio work assigned. It is not available as a last-minute option for students unable or unwilling to complete work as assigned.

COURSE SCHEDULE

The course schedule is subject to change. Minor changes will be announced in class, major ones provided in writing.

Week One
Introduction. Overview of Landscape Architecture
Weekly Reading #1
Week Two
A Complete History of Landscape Architecture (Abridged) – Landscapes Through TIme
Weekly Readings #2 & #3

Weeks Three and Four
The Urbanized Landscape
History of Landscape Paper Draft
Weeks Five and Six
Defining Landscape Architecture
Weekly Readings #4 & #5 / History of Landscape Paper Final / Landscape Architect Bio Draft
Weeks Seven and Eight
Landscape Conservation and Planning
Weekly Reading #6 / Landscape Architect Bio Final / Conservation Research Essay Draft
Week Nine
Global Influences
Weekly Reading #7 / International Landscape Design Collage
Weeks Ten and Eleven
Resilience, Sustainability and Climate Adaptation
Weekly Reading #8 / Conservation Research Essay Final / Site Visit Sketches Draft
Weeks Twelve and Thirteen
The Process of Design and the Art of Problem Solving
Weekly Reading #9 / Design Process Diagram and Essay / Site Visit Sketches Final
Weeks Fourteen and Fifteen
Areas of Practice and Fields of Collaboration
Summary Portfolio

Accommodations Statement:
Accommodations: 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 Accessibility Resource Center at arcsrvs@unm.edu or by phone at 505-277-3506.

Support: Contact me at [ ] or in office/check-in hours and contact Accessibility Resource Center (https://arc.unm.edu/) at arcsrvs@unm.edu (505) 277-3506.

Other Health, Wellness, Legal and Quality of Life issues:

COVID-19 Health and Awareness. UNM is a mask friendly, but not a mask required, community. To be registered or employed at UNM, Students, faculty, and staff must all meet UNM's Administrative Mandate on Required COVID-19 vaccination. If you are experiencing COVID-19 symptoms, please do not come to class. If you have a positive COVID-19 test, please stay home for five days and isolate yourself from others, per the Centers for Disease Control (CDC) guidelines. If you do need to stay home, please communicate with me at [ ]; I can work with you to provide alternatives for course participation and completion. UNM faculty and staff know that these are challenging times. Please let me, an advisor, or another UNM staff member know that you need support so that we can connect you to the right resources. Please be aware that UNM will publish information on websites and email about any changes to our public health status and community response.

Student Health and Counseling (SHAC) at (505) 277-3136. If you are having active respiratory symptoms (e.g., fever, cough, sore throat, etc.) AND need testing for COVID-19; OR If you recently tested positive and may need oral treatment, call SHAC. SHAC also may offer vaccines and flu shots depending on seasonal availability.

LoboRESPECT Advocacy Center (505) 277-2911 can offer help with contacting faculty and managing challenges that impact your UNM experience.

Title IX:
Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus. Please note that, because UNM faculty, TAs, and GAs are considered "responsible employees" any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct and reporting, please see: https://policy.unm.edu/university-policies/2000/2740.html. LoboRESPECT Advocacy Center, the Women's Resource Center, and the LGBTQ Resource Center all offer confidential services.

Citizenship and/or Immigration Status: All students are welcome in this class regardless of citizenship, residency, or immigration status. Your professor will respect your privacy if you choose to disclose your status. As for all students in the class, family emergency-related absences are normally excused with reasonable notice to the professor, as noted in the attendance guidelines above. UNM as an institution has made a core commitment to the success of all our students, including members of our undocumented community. The Administration's welcome is found on our website: http://undocumented.unm.edu/.

Respectful and Responsible Learning: We all have shared responsibility for ensuring that learning occurs safely, honestly, and equitably. Submitting material as your own work that has been generated on a website, in a publication, by an artificial intelligence algorithm, by another person, or by breaking the rules of an assignment constitutes academic dishonesty. It is a student code of conduct violation that can lead to a disciplinary procedure. *Please ask me for help in finding the resources you need to be successful in this course. I can help you use study resources responsibly and effectively.* Off-campus paper writing services, problem-checkers and services, websites, and AIs can be incorrect or misleading. Learning the course material depends on completing and submitting your own work. UNM preserves and protects the integrity of the academic community through multiple policies including policies on student grievances (Faculty Handbook D175 and D176), academic dishonesty (FH D100), and respectful campus (FH C09). These are in the *Student Pathfinder* (https://pathfinder.unm.edu) and the *Faculty Handbook* (https://handbook.unm.edu).

Connecting to Campus and Finding Support: UNM has many resources and centers to help you thrive, including opportunities to get involved, mental health resources, academic support including tutoring, resource centers for people like you, free food at Lobo Food Pantry, and jobs on campus. Your advisor, staff at the resource centers and Dean of Students, and I can help you find the right opportunities for you.

Course Bibliography:
Boults, Elizabeth, and Chip Sullivan. 2010. Illustrated History of Landscape Design. Hoboken, N.J.: John Wiley & Sons.
Henderson, Ron. *30 Trees: And Why Landscape Architects Love Them*, Birkhäuser, 2024.
Thoren, Roxi. Landscapes of Change: Innovative Designs for Reinvented Sites. United Kingdom: Timber Press, 2014.

Back Frédéric, Jean Giono, and Canadian Broadcasting Corporation, dirs. 1987. The Man Who Planted Trees. Société Radio-Canada.

The following rubric of UNM general eduation 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. *Of broad and tangible interest and intellectual benefit to many students.* 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. *Defined by student learning outcomes related to knowledge, understanding, or skills in the liberal arts.* 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. *Designed to introduce students to habits of mind, theories, concepts and methods in a field or area* Provides modes of thinking and learning that contribute to exploration and satisfaction in career, life, or community endeavors.	
4. *Appropriate for a research university* 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. *Characterized by an inclusive pedagogy* 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	
2. MATHEMATICS & STATISTICS		
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	
3. PHYSICAL AND NATURAL SCIENCES		
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): 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	
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): 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	
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): 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): 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 scholary 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.* 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):

Critical Thinking

Intro to Landscape Architecture: 21st Century Superhero develops critical thinking skills by having students read and analyze texts about landscape architecture and then write about the readings and the landscapes they study.

The course presents challenges for landscape architecture including climate change, biodiversity loss, pollinator habitat loss, air pollution, heat islands and other effects of political and social systems that affect the landscape. Students evaluate evidence/data for credibility for each topic and then develop conclusions and propose solutions using their reading and learning from lectures and presentations to substantiate their claims. The course engages with the solutions available in the landscape in lecture, reading, and case study format.

Students are encouraged to think critically about the systems that create these issues and to propose and think through the ramifications of possible solutions at local and systems scales. Students are assigned visual diagram assignments which allow them to visualize the larger

systems they are learning about. In these diagramming projects, students learn to use scale, texture, color, tone, and line to articulate the influences of these policies and concepts on the physical world around them.

Students are offered opportunities to look through worldviews not their own so they can identify inherent bias in the design of the built environment, such as bias towards able bodies or towards younger people with full mobility.

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

Communications:

Students learn to communicate in oral, written and digital mediums. In their discussion group presentation students speak aloud about a project they have researched and present key elements of the project. In their written responses to readings, students learn to use language clearly and succinctly to articulate their knowledge obtained through the reading.
Students apply strategies such as reading for main points; seeking key arguments, counterarguments, and rebuttals; locating supportive documentation for arguments; reading with a specific stakeholder lens; applying a theoretical lens (e.g. cultural, political, economic) to present to the group and through their written work, their evaluation of the content presented. They also are responsible to create language in writing and in speaking that communicates those evaluations in appropriate manner for the audience. They are also taught to distinguish among authors who support their claims with evidence and those who are engaging in theoretical discussion without support from citations. They apply these skills to their own writing. Students write response papers which require citations in Chicago format, including in text citations and end references. Students are taught correct use of quotations and paraphrase and citations for these references. This sample assignment description illustrates this requirement and learning outcome. “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.” (see sample project included below)

Landscape Architecture requires the communication of ideas from concept inception to building documents. Intro to Landscape Architecture teaches about this process and shows examples of the process of this communication from idea sketch to built work. Students develop presentation skills, writing skills, and diagramming skills through their own participation in class as well as learning about the complex process of client designer builder communication.

Contemporary landscape architecture is also a community engagement process. This course shows students how community engagement works and how community input can help to develop designs that answer community questions about belonging, safety, beauty, and meaning. This level of communication is crucial to public projects and helps students develop an understanding of the pathways from idea to landscape.

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

Personal and Social Responsibility:

Intro to Landscape Architecture: 21st Century Superhero provides students with a framework for understanding social, cultural and social justice issues through the lens of landscape and urban design, developing intercultural reasoning and competencies. Students will learn the narratives of how landscapes come to be, what are the policy and political agents that form landscapes, as well as the designers and inspirations for the forms and functions of a landscape. Students are encouraged to develop their own questions about landscapes and their social and cultural contexts. Assignments, lectures and discussions encourage personal engagement with the questions of place and design.

Landscape architecture is uniquely positioned to offer students the ability to "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." This is the territory of designing the living world around us. This course is the introduction to future studios in ecological design methods and designs for non-humans. The course is set up to ask students to engage with the built world from the perspective of its impacts and how it interacts with eco system services and other frameworks for valuing and respecting ecosystems.

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

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

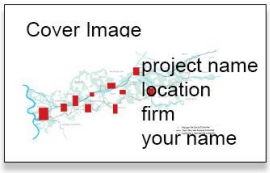
List of Landscape Architecture Firms:

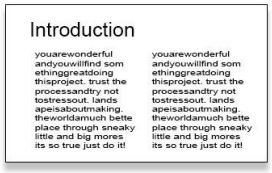
Agence Ter
Altelier Scale
Andreas Kipar (LAND)
Aniket Bhagwat
Aspect Studios
Balmori Associates
D.I.R.T
Field Operations
Gilles Clement
Gustafson Porter + Bowman
Hill Works
Hood Design Studio
Karres + Brans
Latz + Partner
Leonard Grosch (LOIDL)
Martí Franch (EMF)
SINAI
Scape
Stig L. Andersson (SLA)
STOSS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

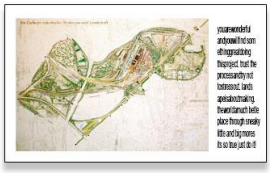
List of questions to inform your research. Please add 3 of your own to this list:

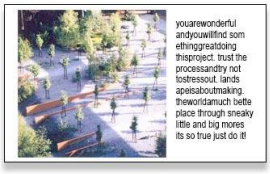
1. How does the project address issues of environmental sustainability?
2. Does the project consider clients other than humans?
3. Does the project address social justice issues?
4. How is the project engaged with and by what communities in different seasons?
5. What are the successes of the project?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

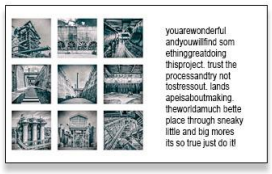
Please download and review the InDesign Template from Canvas.
Sneak peak:











Have fun on your adventure!

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4267
Institution	NMHU
Applicant(s)	iwilliamson@nmhu.edu
Status	NMHED_REVIEW
Submitted	2025-08-07 09:58 AM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Daniel Brown

Chief Academic Officer Email
daniel@nmhu.edu

Registrar Name
Henrietta Romero

Registrar Email
hromero@nmhu.edu

Course's Academic Department
Sociology, Anthropology and Criminal Justice

Is this a Application a Re-Submission
yes

Describe the Clarifications to the Original Application
The attached assessment section was completely changed to match the course better and answer the critique of the committee.

Institutional Course Information

Prefix
SOCI

Number
2310

Title
Contemporary Social Problems

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)?
Yes

Co-requisite Course

Prefix
n/a

Number
n/a

Title
n/a

New Mexico Common Course Information

Prefix
SOCI

Number
2310

Title
Contemporary Social Problems

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. State and explain major social problems in the United States, and how social problems become constructed as
problems.
2. Generate and analyze policy-related solutions associated with social problems from various perspectives.
3. Critically examine social problems through the use of sociological theories, methods, and empirical techniques.
4. Discuss and critique connections, both national and global, between social problems and social inequalities (e.g.,
social class, race/ethnicity, and gender/sexuality).

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.

Students will improve their listening and communication skills through developing, interpreting, and expressing ideas. Through
lectures, class discussion, in-class exercises, required class readings, and videos, students will critically explore, and assess, the
validity of various relevant topics. These topics may include inequality, poverty, racism, family life, urbanization, work, aging,
crime, terrorism, environmental degradation, and/or popular culture. Students will be asked to bring discussion questions to
some class meetings, based on the week's readings, to spark class discussion. The instructor or selected students will facilitate
debates or discussions on how social problems are defined differently by various groups (e.g., policymakers, activists,
marginalized communities). Students will write reports identifying a social problem, explaining its significance, and analyzing how
it has been constructed as a problem. A summary of these reports will be shared with the class. Group projects will encourage
students to propose a policy solution to a social problem and present it to the class.

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

Students will hone their critical thinking skills and their ability to critically evaluate today's social problems. Class readings, lectures and discussions will permit students to gather, analyze, evaluate, and synthesize information relevant to social problems and activism. Assigned readings on key social issues (e.g., poverty, racial inequality, climate change, healthcare access) will culminate in students discussing how these issues are framed in media, politics, and public discourse. Role-playing exercises will allow students to take on the roles of stakeholders (e.g., politicians, community members, business leaders) and debate policy solutions. Writing assignments and quizzes will ask students to analyze empirical data (e.g., census data, crime statistics, health disparities) and identify patterns and trends related to social problems. A final essay exam will ask students to "consider" the material read during the entire course and integrate ideas from different sources in a comprehensive and evaluative manner.

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.

Social Responsibility--Students will gain and be able to demonstrate a basic knowledge of social problems. Through various class activities, students will gain a better understanding of local, national, and global issues. The instructor will invite guest speakers from the community (e.g., policymakers, activists, or nonprofit leaders) to discuss their perspectives on addressing social problems. By cultivating a connection between students and community, students will develop a sense of social responsibility for the creation of a healthier community while respecting traditional spaces. Reflective writing assignments will encourage students to demonstrate specific knowledge of social issues. Group discussions will allow for an exploration, on the global dimensions, of various social problems (e.g., how climate change disproportionately affects low-income countries).

Personal Responsibility-- Students will gain the skills necessary to understand and evaluate social problems. Students will demonstrate an understanding of different strategies for researching relevant issues. Reflective writing samples based on lectures, class discussion, required class readings, and assigned videos, will allow students to explore how social inequalities (e.g., racism, sexism, classism) intersect to shape social problems (e.g., the school-to-prison pipeline, wage gap). The instructor, or selected students, will facilitate discussions on global issues (e.g., migration, climate change) and their connections to local social problems. The instructor will assign readings focused on comparative studies of social problems in the U.S. and other countries (e.g., income inequality, gender-based violence, environmental.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

https://its.nmhu.edu/IntranetUploads/007665-outcomesass-118202225900.pdf

Application History

Type	username	Text	Timestamp
Submittal	iwilliamson@nmhu.edu	Submitted by iwilliamson@nmhu.edu	2025-08-07 09:58 AM (US/Mountain)
Authorization	iwilliamson@nmhu.edu	iwilliamson@nmhu.edu has authorized the application for submittal	2025-08-07 09:58 AM (US/Mountain)
Created	iwilliamson@nmhu.edu	Application started by iwilliamson@nmhu.edu	2025-08-07 09:31 AM (US/Mountain)

This Assessment Addresses

CRITICAL THINKING & SOCIAL RESPONSIBILITY

- This in-class exercise will allow students to research and debate various social issues/problems.
- The exercise engages the entire class. 4-5 students will be randomly assigned to each team. Audience members will be asked to discuss debate points, provide constructive criticism, add missing perspectives, and then vote on the debate.

SOCIAL ISSUES/PROBLEMS DEBATE

NOTE: Teams should take notes while other team is presenting to use for rebuttal

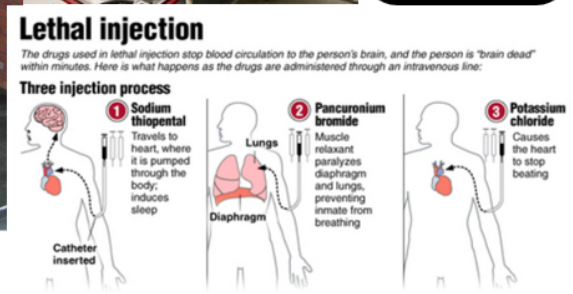
- The "pro" or "yes" side of the topic will present first (10 minutes)
- The "con" or "no" side will present second (10 minutes)
- The teams will take a 5-minute recess to prepare a "response" to the other side's position
- Teams (and audience) will reconvene
  - The ***responder(s)*** on the "con" side will respond first (3 minutes)
  - Then the ***responder(s)*** on the "pro" side will respond (3 minutes)
- Each team will then ask the "summarizer" to present a 1-minute summation of their main points
- The class will discuss the quality of different points made and vote to determine a "winner."
  - The winning team will receive a grade incentive.

POSSIBLE TOPICS

DEBATE…**IS CAPITAL PUNISHMENT BAD POLICY?**

PRO SIDE: Yes, it is bad policy and should be abolished

CON SIDE: No, it is not bad policy and should be continued



DEBATE …

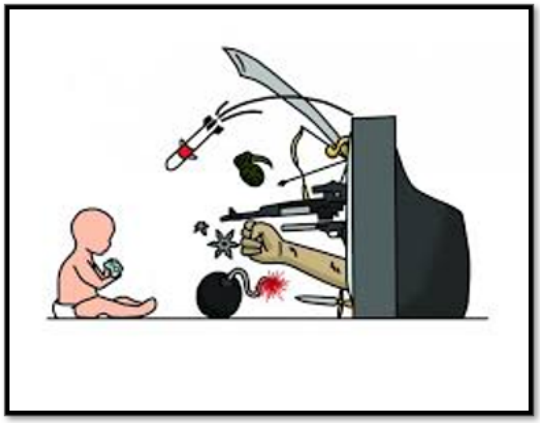
Does Family Disruption Contribute to Juvenile Delinquency?

DEBATE…

Should Transgender Be a Recognized Gender Category?

DEBATE …

Are Violent Video Games Dangerous for Children's Social Development?



DEBATE …

Should Parents Be Allowed to Discipline Children Physically?

DEBATE …

Is Pornography Harmful to Women

&/or

Society?

This Assessment Addresses

CRITICAL THINKING & SOCIAL RESPONSIBILITY

- This in-class exercise will allow students to research and debate various social issues/problems.
- The exercise engages the entire class. 4-5 students will be randomly assigned to each team. Audience members will be asked to discuss debate points, provide constructive criticism, add missing perspectives, and then vote on the debate.

SOCIAL ISSUES/PROBLEMS DEBATE

NOTE: Teams should take notes while other team is presenting to use for rebuttal

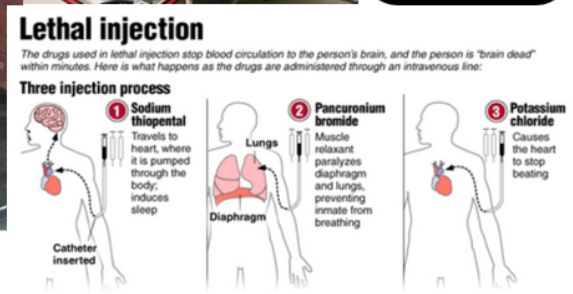
- The "pro" or "yes" side of the topic will present first (10 minutes)
- The "con" or "no" side will present second (10 minutes)
- The teams will take a 5-minute recess to prepare a "response" to the other side's position
- Teams (and audience) will reconvene
  - The ***responder(s)*** on the "con" side will respond first (3 minutes)
  - Then the ***responder(s)*** on the "pro" side will respond (3 minutes)
- Each team will then ask the "summarizer" to present a 1-minute summation of their main points
- The class will discuss the quality of different points made and vote to determine a "winner."
  - The winning team will receive a grade incentive.

POSSIBLE TOPICS

DEBATE…**IS CAPITAL PUNISHMENT BAD POLICY?**

PRO SIDE: Yes, it is bad policy and should be abolished

CON SIDE: No, it is not bad policy and should be continued



DEBATE …

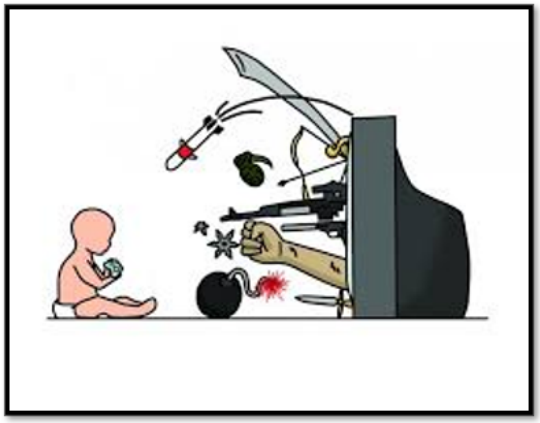
Does Family Disruption Contribute to Juvenile Delinquency?

DEBATE…

Should Transgender Be a Recognized Gender Category?

DEBATE …

Are Violent Video Games Dangerous for Children's Social Development?



DEBATE …

Should Parents Be Allowed to Discipline Children Physically?

DEBATE …

Is Pornography Harmful to Women

&/or

Society?

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4311
Institution	SENMC
Applicant(s)	adewey@senmc.edu
Status	NMHED_REVIEW
Submitted	2025-08-13 02:38 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Frosso

Chief Academic Officer Email
Seitaridou

Registrar Name
Amy Dewey

Registrar Email
adewey@senmc.edu

Course's Academic Department
English, Humanities, and Arts Department

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
ENGL

Number
1120

Title
Composition 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
ENGL

Number
1120

Title
Composition II

New Mexico Common Course Information

Prefix
ENGL

Number
1120

Title
Composition II

A. Content Area and Essential Skills

To which area should this course be added?
Communications

Selected Areas
Critical Thinking, Information & Digital Literacy, Communication

Section B. Learning Outcomes

List all common course student learning outcomes for the course.

1. Analyze the rhetorical situation for purpose, main ideas, support, audience, and organizational strategies in a variety of genres.
2. Employ writing processes such as planning, organizing, composing, and revising.
3. Use a variety of research methods to gather appropriate, credible information.
4. Evaluate sources, claims, and evidence for their relevance, credibility, and purpose.
5. Quote, paraphrase, and summarize sources ethically, citing and documenting them appropriately.
6. Integrate information from sources to effectively support claims as well as other purposes (to provide background information, evidence/examples, illustrate an alternative view, etc.).
7. Use appropriate voice (including syntax and word choice).

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.

Readings, class discussions, and activities will develop the Communication Essential Skill and the component skills embedded in it. The students will read a variety of texts from multiple genres and analyze the rhetorical situations of each. Smaller assignments, class discussions, and modeling close reading strategies will scaffold the goals of the rhetorical analysis essay. To demonstrate their learning, students will compose a four-page rhetorical analysis paper, in which they will analyze a text, identifying its audience, purpose, and rhetorical strategies. They will be required to pick a text and consider what genre/medium it represents. For instance, a student might choose a political campaign speech from a past election. This will require an understanding of the genre and its conventions, which the student must research. This rhetorical analysis thesis statement will examine whether the text is effective in its goal. This thesis statement will lay the basis for the student's argument about the effectiveness of the text. This assignment ties to all the student learning outcomes listed in the common course catalog.

Additionally, students will compose a letter of reflection on their research and writing process after the rhetorical analysis is completed. This reflection will require students to consider and evaluate the research they gathered and their methods for gathering it, with the goal of refining those methods in advance of the researched argumentative essay, which is the final major project in the course.

The rhetorical analysis will be graded on a common rubric developed by the English faculty members at the college. The rubric will use the component skills as performance indicators, and link Student Learning

Outcomes one, three, four, five, six, and seven.

Critical Thinking. Problem Setting; Evidence Acquisition; Evidence 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 will compose a five to seven page researched argumentative essay to demonstrate the Critical Thinking Essential Skill and its component skills. The students will demonstrate problem setting by developing an argumentative thesis statement that states a claim and the best reason.

The students will conduct research on their chosen topic and prepare an annotated bibliography. They will be required to have at least two scholarly sources for their essay. To scaffold the evidence acquisition, the students will work with the college library staff to explore available databases. Exercises in class will help them build evidence evaluation skills, including reading for bias and relevance. Working in pairs, they will help each other evaluate sources.

The researched argumentative essay will require the students to prove their claim with the evidence they've gathered and develop logical conclusions from that evidence. This skill will be evaluated on the rubric, which will be developed by the English faculty members and link to Student Learning Outcomes three, four, five, and six.

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.

Students will demonstrate their learning of three of the four component skills of Information and Digital Literacy: Authority and Value of Information, Information Structures, and Research as Inquiry. These component skills were decided upon by the general education faculty.

The annotated bibliography for the researched argumentative essay will develop the Authority and Value of Information component skill by requiring the students to evaluate the research they gathered for the major project The students will use APA citation style to create references for their essay, and evaluate the sources they've chosen. In addition, proper citation style will be emphasized by exercises in class. Students will be provided with the tools they need to cite sources properly, and transfer those skills to other classes that will require academic writing and citation.

The students will have a choice between options for a multi-modal argument assignment. Students can choose the modality in which they wish to present their rhetorical analysis essay assignment. Choices include a ten-minute podcast, a ten-minute in class presentation with visual aids, a ten-minute video, or a website /blog they have designed. The students will demonstrate their understanding of the chosen modality, thus meeting the Information Structures component skill.

The researched argumentative essay will allow the students to demonstrate the Research as Inquiry component skill. The students will formulate their argumentative thesis statements and outline the claim and reasons as part of their drafting process. Additionally, they will keep a research journal to chart their research progress, helping them see the way that the process of research itself impacts the composition of the argument.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan

https://senmc.edu/documents/policies-and-handbooks/assessment_handbook.pdf

Application History

Type	username	Text	Timestamp
Submittal	adewey@senmc.edu	Submitted by adewey@senmc.edu	2025-08-13 02:38 PM (US/Mountain)
Authorization	adewey@senmc.edu	adewey@senmc.edu has authorized the application for submittal	2025-08-13 02:37 PM (US/Mountain)
Created	adewey@senmc.edu	Application started by adewey@senmc.edu	2025-08-13 02:20 PM (US/Mountain)

Assignment: Argumentative Research Essay

In this assignment, you will craft a well-researched, argumentative essay that makes a clear argument on a topic of your choice. Your argumentative thesis statement will contain a claim (the point you are trying to make) and your best reason for the claim. Your argument should be supported by credible sources that serve as evidence for your claim and reason.

You will effectively integrate research while considering rhetorical situations such as audience, purpose, and medium. You will apply research methods, evaluate sources for credibility and relevance, and synthesize information ethically using proper citation practices (APA). You will be required to use at least two scholarly sources in your essay.

Assignment Objectives

This assignment aligns with the following **Student Learning Outcomes (SLOs)** and **General Education Outcomes:**

Student Learning Outcomes (SLOs)	**General Education Outcomes**
Analyze rhetorical situations for purpose, audience, and organization in various genres.	**Genre and Medium Awareness, Application, and Versatility** – Identify and communicate in various genres using appropriate strategies.
Employ writing processes such as planning, organizing, composing, and revising.	**Strategies for Understanding and Evaluating Messages** – Apply reading strategies to evaluate arguments and sources.
Use a variety of research methods to gather appropriate, credible information.	**Research as Inquiry** – Engage in an iterative process to refine research questions and locate sources.
Evaluate sources, claims, and evidence for relevance, credibility, and purpose.	**Evaluation and Production of Arguments** – Assess the authority of sources and integrate claims ethically.
Integrate and cite sources appropriately.	**Authority and Value of Information** – Recognize and apply ethical citation practices.
Use appropriate voice, syntax, and word choice for clarity and rhetorical effectiveness.	**Digital Literacy & Information Structures** – Organize and communicate information effectively.

Assignment Guidelines

- **Length:** 5-7 pages (double-spaced, 12-pt Times New Roman, 1-inch margins)
- **Sources:** Minimum of 5 credible sources (at least 2 scholarly sources)
- **Citation Style:** APA
- **Format:** Introduction, thesis statement, body paragraphs (with evidence), counterarguments, conclusion

Submission Instructions

- Submit your final essay via Canvas as a Word or PDF file.

Researched Argumentative Essay Rubric

Criteria	Weight	Description
Thesis & Argument Development	25%	The argument is clear, well-developed, and supported by logical reasoning and research.
Use of Research & Evidence	20%	Sources are integrated effectively, supporting claims with strong evidence.
Source Evaluation & Citation	25%	Sources are properly cited, demonstrating ethical research practices.
Organization & Rhetorical Awareness	15%	The essay follows a logical structure and demonstrates an understanding of audience and purpose.
Writing Style & Mechanics	15%	The writing is clear, concise, and free of grammatical errors.

Assignment: Argumentative Research Essay

In this assignment, you will craft a well-researched, argumentative essay that makes a clear argument on a topic of your choice. Your argumentative thesis statement will contain a claim (the point you are trying to make) and your best reason for the claim. Your argument should be supported by credible sources that serve as evidence for your claim and reason.

You will effectively integrate research while considering rhetorical situations such as audience, purpose, and medium. You will apply research methods, evaluate sources for credibility and relevance, and synthesize information ethically using proper citation practices (APA). You will be required to use at least two scholarly sources in your essay.

Assignment Objectives

This assignment aligns with the following **Student Learning Outcomes (SLOs)** and **General Education Outcomes:**

Student Learning Outcomes (SLOs)	**General Education Outcomes**
Analyze rhetorical situations for purpose, audience, and organization in various genres.	**Genre and Medium Awareness, Application, and Versatility** – Identify and communicate in various genres using appropriate strategies.
Employ writing processes such as planning, organizing, composing, and revising.	**Strategies for Understanding and Evaluating Messages** – Apply reading strategies to evaluate arguments and sources.
Use a variety of research methods to gather appropriate, credible information.	**Research as Inquiry** – Engage in an iterative process to refine research questions and locate sources.
Evaluate sources, claims, and evidence for relevance, credibility, and purpose.	**Evaluation and Production of Arguments** – Assess the authority of sources and integrate claims ethically.
Integrate and cite sources appropriately.	**Authority and Value of Information** – Recognize and apply ethical citation practices.
Use appropriate voice, syntax, and word choice for clarity and rhetorical effectiveness.	**Digital Literacy & Information Structures** – Organize and communicate information effectively.

Assignment Guidelines

- **Length:** 5-7 pages (double-spaced, 12-pt Times New Roman, 1-inch margins)
- **Sources:** Minimum of 5 credible sources (at least 2 scholarly sources)
- **Citation Style:** APA
- **Format:** Introduction, thesis statement, body paragraphs (with evidence), counterarguments, conclusion

Submission Instructions

- Submit your final essay via Canvas as a Word or PDF file.

Researched Argumentative Essay Rubric

Criteria	Weight	Description
Thesis & Argument Development	25%	The argument is clear, well-developed, and supported by logical reasoning and research.
Use of Research & Evidence	20%	Sources are integrated effectively, supporting claims with strong evidence.
Source Evaluation & Citation	25%	Sources are properly cited, demonstrating ethical research practices.
Organization & Rhetorical Awareness	15%	The essay follows a logical structure and demonstrates an understanding of audience and purpose.
Writing Style & Mechanics	15%	The writing is clear, concise, and free of grammatical errors.

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4358
Institution	NNMC
Applicant(s)	lorig@nnmc.edu
Status	NMHED_REVIEW
Submitted	2025-08-29 08:12 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
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)?
Yes

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 around fiction.
2. Read and critically engage with a wide array of fiction texts.
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: This course is a reading and workshop introduction to the fundamental working modes of fiction. Throughout this course, students will be expected to read, discuss, and evaluate classic and contemporary fiction closely and analyze the craft features employed, such as use of point of view, establishing an unreliable narrator, nonlinear story structure (or any structural analysis), repetition of images, use of details, and worldbuilding. They will then be expected to write frequently using the various fiction craft elements we discuss throughout the course. Students will be assessed on their use of these techniques and the written reflections they produce about their own work that discuss how effective they find the various techniques for their writing.

Strategies for Understanding and Evaluating Messages: Throughout the course, students will be expected to engage in critical conversations about texts and then employ the discussed craft elements and ideas in their own creative work. Through this process, students will have the opportunity to understand concepts theoretically and then use them in practical ways in their own writing. In various assignments and discussions, students will be expected to identify craft techniques, major themes, and main goals or ideas in assigned readings and support their findings through evidence from the text. Additionally, at different points in the semester, students will be expected to write short revisions accompanied by reflections in which they discuss the craft elements they are focusing on in their work. The revision process should be a place where students re-imagine the story, offer clarity, or follow new thematic points of interest that come up in the writing process, in addition to clarifying mechanics and format. This allows students to demonstrate their understanding of different craft elements and think creatively about how they might implement them in

their own work. This process prompts students to think more critically and purposefully about their own work and how other authors use craft to tell effecting stories while challenging them to articulate their vision for their own writing. Discussing and discerning messages in fiction is useful because it helps writers develop techniques to effectively communicate their own messages and connect with other authors' work.

Evaluation and Production of Arguments: Students will engage in a group presentation that evaluates their ability to organize a coherent and thoughtful analysis of the use of craft elements by a specific author through background on the author and situation of the story, explaining the theory behind the chosen craft element, presenting evidence of the craft element's usage in the writing, comparing its use to other authors, and making an argument about the effect of the craft element on the reader. Another focus of the class will be evaluating writing and giving productive critical feedback to peers. Students will give and receive feedback using a variety of written and oral critique methods, in both small and large group settings, and learn to describe, analyze, and interpret elements of fiction. This process will focus on respecting an author's intent, close reading, and expressing one's own opinions in a productive way. Students will practice giving feedback on various fiction stories through reading responses and classroom discussions, so that they have a safe space to experiment with this process before using it on each other's work.

Critical Thinking. Problem Setting; Evidence Acquisition; Evidence 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 will be challenged to investigate readings to identify craft elements, intended audience, authorial intent, and historical and cultural contexts. They will then unravel the choices that different authors made that led to the final product and discuss how these choices effected the experience for the reader. Students will be evaluated on these skills through focused weekly discussions about a variety of readings, and in their group presentation on a craft element. Discussions will be assessed through students' close-reading skills and ability to use textual evidence to support their ideas. In the group presentation students will have a more formal evaluation of organizing a coherent and thoughtful analysis of the use of craft elements by a selected author. Through these assignments, students will be asked to think critically and focus on author intent and then experiment with the craft choices in their own work to see how it influences their writing.

Evidence Acquisition: Students will be assigned a wide array of fiction readings, as well as readings on craft and theory. They will be expected to use evidence from fiction texts to support their ideas and find examples of craft usages when making claims in classroom discussions and in their group presentation on a craft element. Additionally, students will use the library general collection and the college databases to find resources for their research projects.

Evidence Evaluation: Students will be expected to present their group research on a particular craft element and how it is utilized in various texts and write a craft analysis paper over a separate craft technique during the class. Students will have to investigate different texts in order to establish the multiple ways a craft element is utilized and evaluate the effectiveness of the different examples. They will also be expected to engage with theoretical discussions of the different craft techniques and add their own critical analysis of a text through these theoretical frameworks. These assignments should be a formal exploration of the techniques of fiction that have stood out to students and that they are interested in implementing in their own work. In this way, the research they do should become part of the creative work that students complete at the end of the semester and they should be able to discuss their writing in terms of craft decisions and what they are expecting from the audience's reaction based on those decisions. Together with the critical discussions of texts throughout the semester, students should have a strong foundation in fiction techniques

and be able to communicate the choices they make as writers.

Reasoning/Conclusion: Through their presentation and craft analysis assignment students should demonstrate their ability to form defensible and thoughtful conclusions about themes and the different usages of various fictional craft elements in a story. Their findings will be evaluated on their ability to support their claims with evidence from the texts, and ability to demonstrate a clear understanding of theories around their chosen subject.

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: Fiction creates the unique experience of seeing the world through different perspectives and life situations that might not be otherwise available to a reader. In this way, fiction can create empathy and diversify the perspective of a reader. In this class, students will discuss ways of seeing the world through discussions on perspective and read works by authors from various backgrounds and experiences. Through these discussions and writing prompts, students should begin to think about situation and perspective as a major element of a character's story, complicating broad generalizations they might have about the world. This will be assessed through the background research done in their group presentations that contextualize a piece of writing inside a historical, cultural, and political situation and by being able to discuss writing inside the contextual situation in which it was produced.

Collaboration skills, teamwork and value systems: Students will be asked to collaborate in several ways throughout the course. Firstly, they will develop a critical presentation on a craft technique in small groups that encourages teamwork and discourse. Also, they will be providing feedback on each other's work, which promotes writing as an act of community and provides space for a myriad of voices and perspectives. Students will then be expected to think critically about feedback and incorporate that feedback into the edits of their own creative work. And lastly, they will engage in critical conversations around fictional texts from a wide range of authors. This will promote civil discourse that evaluates situation and intent as well as effectiveness in a meaningful and open way. Feedback will be assessed through a series of criteria that include, clarity, considering authorial intent, and the use of evidence to back up claims. As writers, students will work on how to productively engage with feedback and incorporate it into their writing, as well as learning self-critique methods for evaluating their own writing. This process builds communication skills and helps students articulate their reactions to written work, pushing them to defend their opinions and writing choices and making them more thoughtful writers and readers.

Civic discourse, civic knowledge, and engagement: The writing prompts in this class will also encourage students to engage with their own environments, communities, and experiences, highlighting the importance of their individual perspectives to empower them to communicate their own stories in ways that feel natural to their voice. These prompts will often be conducted through the lens of craft elements like setting and descriptive writing, and students will be assessed on their understanding and usage of these craft elements in their creative writing and reflections. By cultivating these voices, this class will encourage students to engage with the world and show the value in their own particular perspectives. The class will be heavily influenced by regional authors who write about local settings and culture, which will demonstrate a diverse range of local perspectives and also encourage students to write about their own traditions, communities, and the issues in their own lives.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan
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	2025-08-29 08:12 AM (US/Mountain)
Authorization	lorig@nnmc.edu	lorig@nnmc.edu has authorized the application for submittal	2025-08-29 08:12 AM (US/Mountain)
Created	lorig@nnmc.edu	Application started by lorig@nnmc.edu	2025-08-29 08:01 AM (US/Mountain)

Craft Analysis Group Presentation

In a group, prepare a 9-12 minute presentation that analyzes how a specific author uses one or two of the craft elements we've discussed in class. You may choose to analyze an excerpt from a novel or several short stories. Each member of the group should contribute to the research, preparation, and presentation of the material. Craft elements could include: narrative perspective, character development, setting, plot and story structure, symbolism, stylistic choices, or several other options of your choice.

Your presentation should include:

- Background on the author and the work being analyzed. This could include a short biography, historical or cultural context that might be beneficial to understanding the story, the critical or public response to the story, or the political situation in which the story was written.
- An analysis and explanation of the craft element(s) being discussed. This should include sources other than the text.
- Textual evidence that illustrates how the craft element is being executed.
- A description of intent and effect. What intent did the author have in your opinion and did they achieve that goal? What is the effect of this craft element in the writing?
- A comparison to other writing that uses similar craft elements. Is this part of a larger movement in literature? Does this have a similar or different effect than writing from other authors who use similar techniques? Is there something about the way the author employs this craft element that makes it unique?

Craft Analysis Group Presentation Rubric

This assignment is worth 100 points total.

The group will receive a score out of 50 points for the presentation.

Each member of the group will receive an individual score out of 50 based on their reflections and role in the presentation.

Group presentation:

Clarity and Organization • Is the presentation organized in a thoughtful and clear way • Are slides or other visual elements presented in a way that shows intention and are beneficial to the presentation • Is the length 9-12 minutes appropriate • Does each element seem rehearsed and thorough	/10
Background and Context --Include relevant background on the author and the work being analyzed. This could include: • a short biography • historical or cultural context that might be beneficial to understanding the story • the critical or public response to the story • the political situation in which the story was written.	/5
Analysis of Craft Element(s) • Clear explanation of craft element and any background that might be useful to the audience • Outside sources used • Clearly understood	/10
Textual Evidence	/10

• Includes specific examples from the writing • Detail the frequency with which the craft element is used and where in the story it is implemented	
Analysis • Discuss what you believe the author's intent is in using specific craft element • Analyze what the effective of the craft element • Compare use of craft to other authors	/15

Individual Score

Personal Reflection (completed after presentation) • How did you support the group? • What element were you responsible for? • How did you prepare for the presentation (research, visual presentation prep, analysis)	/15
Organization and Presentation • Were the elements of the presentation you were responsible for organized, practiced, and well-explained.	/15
Research and Critical Thinking – Die elements of the presentation you prepared • Use appropriate sources • Use evidence to support claims • Include thoughtful and interesting analysis	/20

Craft Analysis Group Presentation

In a group, prepare a 9-12 minute presentation that analyzes how a specific author uses one or two of the craft elements we've discussed in class. You may choose to analyze an excerpt from a novel or several short stories. Each member of the group should contribute to the research, preparation, and presentation of the material. Craft elements could include: narrative perspective, character development, setting, plot and story structure, symbolism, stylistic choices, or several other options of your choice.

Your presentation should include:

- Background on the author and the work being analyzed. This could include a short biography, historical or cultural context that might be beneficial to understanding the story, the critical or public response to the story, or the political situation in which the story was written.
- An analysis and explanation of the craft element(s) being discussed. This should include sources other than the text.
- Textual evidence that illustrates how the craft element is being executed.
- A description of intent and effect. What intent did the author have in your opinion and did they achieve that goal? What is the effect of this craft element in the writing?
- A comparison to other writing that uses similar craft elements. Is this part of a larger movement in literature? Does this have a similar or different effect than writing from other authors who use similar techniques? Is there something about the way the author employs this craft element that makes it unique?

Craft Analysis Group Presentation Rubric

This assignment is worth 100 points total.

The group will receive a score out of 50 points for the presentation.

Each member of the group will receive an individual score out of 50 based on their reflections and role in the presentation.

Group presentation:

Clarity and Organization • Is the presentation organized in a thoughtful and clear way • Are slides or other visual elements presented in a way that shows intention and are beneficial to the presentation • Is the length 9-12 minutes appropriate • Does each element seem rehearsed and thorough	/10
Background and Context --Include relevant background on the author and the work being analyzed. This could include: • a short biography • historical or cultural context that might be beneficial to understanding the story • the critical or public response to the story • the political situation in which the story was written.	/5
Analysis of Craft Element(s) • Clear explanation of craft element and any background that might be useful to the audience • Outside sources used • Clearly understood	/10
Textual Evidence	/10

• Includes specific examples from the writing • Detail the frequency with which the craft element is used and where in the story it is implemented	
Analysis • Discuss what you believe the author's intent is in using specific craft element • Analyze what the effective of the craft element • Compare use of craft to other authors	/15

Individual Score

Personal Reflection (completed after presentation) • How did you support the group? • What element were you responsible for? • How did you prepare for the presentation (research, visual presentation prep, analysis)	/15
Organization and Presentation • Were the elements of the presentation you were responsible for organized, practiced, and well-explained.	/15
Research and Critical Thinking – Die elements of the presentation you prepared • Use appropriate sources • Use evidence to support claims • Include thoughtful and interesting analysis	/20

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	3157
Institution	LCC
Applicant(s)	tjackson@luna.edu
Status	NMHED_REVIEW
Submitted	2025-09-08 12:53 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Henrietta Romero

Chief Academic Officer Email
hromero@luna.edu

Registrar Name
Rachael Lucero

Registrar Email
rlucero@luna.edu

Course's Academic Department
STEM

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
MATH

Number
1350

Title
Introduction to Statistics

Number of credits
3

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

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
1350

Title
Introduction to Statistics

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.
Student Learning Outcomes
1. Explain the general concepts of statistics.
a. Explain and evaluate statistics used in the real world (from a news article, research project, etc.).
b. Use statistical vocabulary appropriately.
c. Distinguish between descriptive and inferential statistics.
d. Distinguish between qualitative and quantitative data.
e. Distinguish between populations and samples, and parameters and statistics.
f. Give examples of independent and dependent variables.
2. Presentation and description of data.

a. Present data graphically using histograms, frequency curves and other statistical graphs.
b. Interpret graphs of data, including histograms and shapes of distributions.
3. Summarize data using measures of central tendency and variation.
a. Calculate and interpret the mean, median, and mode to describe data.
b. Calculate and interpret range, variance, and standard deviation to describe data.
4. Present the concepts of probability.
a. Interpret basic probabilities.
b. Calculate probabilities using compound probability rules and the binomial distribution.
c. Calculate probabilities using the standard normal distribution and relate them to areas under the curve.
d. Determine if the binomial distribution can be approximated with the normal distribution.
e. Describe the relationship between the sampling distribution and the population distribution.
f. Use the central limit theorem to approximate the probability distribution and calculate probabilities.
5. Compute point and interval estimates.
a. Determine the confidence interval for a parameter.
b. Interpret the confidence level and margin of error.
c. Determine whether a statistical technique is appropriate under stated conditions.
6. Perform hypothesis tests.
a. Determine whether a statistical test is appropriate under stated conditions.
b. Identify null and alternative hypothesis.
c. Perform and interpret statistical tests (e.g., z-test, t-test, one-tailed and two-tailed, one-sample, two-sample) and determine whether data is statistically significant.
d. State the conclusion of a hypothesis test.
e. Interpret a p-value as compared to a significance level.
f. Explain why a test can lead us to reject a null hypothesis, not accept one.
g. Distinguish between Type I and Type II errors.
7. Analyze data using regression and correlation.
a. Explain the difference between correlation and causation.
b. Construct and interpret scatter plots.
c. Calculate and interpret the linear correlation coefficient.
d. Determine and use the equation of a least-squares regression line between two variables to make predictions.
e. Interpret the meaning of the coefficient of determination.
8. Optional topics.
a. Inter-quartile range, boxplots, stem-and-leaf plots.
b. Combinations and permutations.
c. The Poisson distribution.
d. Statistical power.
e. Chi-square.
f. Analysis of variance.

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.

This course focuses on effectively communicating statistical findings through various assignments and projects. Students will apply statistical concepts to real-world scenarios, such as evaluating the data that comes from clinical trials of medication to determine effectiveness. Students will use various statistical tests to calculate mean, evaluate data to determine rate of side effects, and use data to determine probability of success. Throughout the course, students will actively interpret data, and construct well-reasoned arguments based on quantitative evidence. For example, an assignment might involve analyzing a dataset using Excel to create visual representations like charts and graphs, then writing a report to explain the findings. Assessment includes: written reports to determine how well the student connects findings to the research question; oral reports to determine how well students are able to translate data in to visual representation and explain the conclusions; and, various problem-solving exercises where students have to analyze data and communicate their findings.

Critical Thinking. Problem Setting; Evidence Acquisition; Evidence 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 will develop critical thinking skills by defining and evaluating problems using numerical data. They will learn to collect, interpret, and analyze datasets to identify trends and assess variability. The course emphasizes evaluating sources of statistical information, questioning assumptions, and applying statistical reasoning to solve problems. For instance, a homework assignment might require students to use Excel functions to calculate statistical measures and interpret the results to draw conclusions about the data. Assessing critical thinking in this course includes using problem-based scenarios where students must formulate a question, choose an appropriate statistical method, analyze the data, and draw conclusions based on their findings. Students are also assessed through open-ended questions and essays which requires students to explain their reasoning and make connections between concepts learned.

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 course provides tools to effectively communicate and analyze quantitative information. Students will practice interpreting statistical outputs such as charts, histograms, and regression models, and learn to critically evaluate statistical arguments. A suggested project could involve using probability models to predict business trends or analyze survey data, with students presenting their findings in a detailed report. Project-based learning allows for assessment of a variety of skills such as the student's ability to formulate a question, choose a method, analyze the data, and communicate the results. Additional assessment includes, open-ended problem sets, statistical critiques, and rubrics that not only grade the accuracy of calculations, but also the quality of the interpretation, methods used, and clarity of communication.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan
https://luna.edu/academic_assessment

Application History

Type	username	Text	Timestamp
Submittal	tjackson@luna.edu	Submitted by tjackson@luna.edu	2025-09-08 12:53 PM (US/Mountain)
Authorization	tjackson@luna.edu	tjackson@luna.edu has authorized the application for submittal	2025-09-08 12:53 PM (US/Mountain)
Created	tjackson@luna.edu	Application started by tjackson@luna.edu	2025-01-21 01:04 PM (US/Mountain)

Hypoth

Project De
The presen
recently rec
random sar
weight for u
significance
the null hyp
Use a cell r
unless othe

Steps to P

Step
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19

19
20
21
22

ıesis Testing for the Population Mean - Variance Known

escription:

t study shows data for bags of sugar produced by a certain manufacturer. The manufacturer produces bags of 32 oz ceived complaints that the weight of sugar bags is inconsistent. The line manager would like to test the claim, and co mple of 50 sugar bags. The standard deviation of the production process (population) is known. We will find the ave the bags of sugar for the random sample of bags. We will use Excel functions to find the critical value(s), the observ , and the test statistic. We will compare the test statistic with our critical value(s) and decide if we should reject or r othesis. We will use different alpha levels to test the hypothesis. We will identify possible errors made and their typ eference or a single formula where appropriate in order to receive full credit. Do not copy and paste values or type v rwise directed, as you will not receive full credit for your answers.

erform:

Instructions
Start Excel. Download and open the workbook named: **Hypothesis_Testing_for_the_Population_Mean_Known_Variance_Start**
In cell C3, find the average bag weight for the sample of bags on the Data sheet in the range B2:B51.
In cell C4, find the sample size of the sample of bags on the Data sheet in the range B2:B51.
To test the null hypothesis for the mean of the sugar bags on the Data sheet, knowing that process variance (population) is 0.0025, what is the appropriate probability table to use? Choose your answer from the dropdown menu in cell C5.
The manager would like to test that the bags weigh 32 oz. (null hypothesis) against the alternative that they do not. Is this a two-sided test? Choose your answer from the dropdown menu in cell C6.
In cell C7, find a one-sided critical value from the appropriate probability table to test the hypothesis at alpha = 0.05. Hint: use the NORM.S.INV function.
What is/are the sign(s) of the critical value(s) for the test of the hypothesis at alpha = 0.05? Choose your answer from the dropdown menu in cell C8.
In cell C9, find the one-sided observed level of significance for the test. Hint: use the Z.TEST function.
Do we need to multiply or divide the value in cell C9 by two? Choose your answer from the dropdown menu in cell C10.
In cell C11, find the value of the test statistic. Hint: use the NORM.S.INV function, and be careful of the sign of your answer.
What is the correct sign of the test statistic value in cell C11? Choose your answer from the dropdown menu in cell C12.
By assessing the answers in cells C7, C8, C11, and C12, do you reject the null hypothesis? Choose your answer from the dropdown menu in cell C13.
Justify the answer you chose in cell C13. Choose your answer from the dropdown menu in cell C14.
Based on your answer in cell C13, we can conclude at alpha = 0.05 that: Choose your answer from the dropdown menu in cell C15.
In cell C16, find the one-sided critical value from the appropriate probability table to test the hypothesis at alpha = 0.10. Hint: use the NORM.S.INV function.
What is/are the sign(s) of the critical value(s) for the test of the hypothesis at alpha = 0.10? Choose your answer from the dropdown menu in cell C17.
By assessing the answers in cells C11, C12, C16, and C17, do you reject the null hypothesis? Choose your answer from the dropdown menu in cell C18.
Justify the answer you chose in cell C18. Choose your answer from the dropdown menu in cell C19.
Based on your answer in cell C18, we can conclude at alpha = 0.10 that:

Choose your answer from the dropdown menu in cell C20.
Based on your answer in cell C13, what type of error might have been made? Choose your answer from the dropdown menu in cell C21
Based on your answer in cell C18, what type of error might have been made? Choose your answer from the dropdown menu in cell C22
Save your file and submit for grading.
Total Score

z. and has
ollects a
rage
ed level of
not reject
es.
values,

Points Possible
0
5
5
5
5
5
5
5
5
5
5
5
5
5
5
5
5
5
5

5
5
0
100

Sugar Bag	Sugar Bag Weight (oz.)
1	32.039
2	32.051
3	31.975
4	32.041
5	32.011
6	32.048
7	32.013
8	32.050
9	31.968
10	32.018
11	31.954
12	31.964
13	32.022
14	32.001
15	32.039
16	31.948
17	31.946
18	32.046
19	32.045
20	31.955
21	32.000
22	32.052
23	32.038
24	32.039
25	32.012
26	31.996
27	32.057
28	31.953
29	31.953
30	32.000
31	32.036
32	32.050
33	32.034
34	32.017
35	32.050
36	32.043
37	32.009
38	31.989
39	32.055
40	32.033
41	31.971
42	32.052
43	31.979

44	31.957
45	32.055
46	32.001
47	31.999
48	32.087
49	32.015
50	31.968

Hy

cred

1-2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.

18.

19.

20.

21.

pothesis Testing for the Population Mean - Variance Known

it for your answers.

In cell C3, find the average bag weight for the sample of bags on the Data sheet in the range B2:B51.

In cell C4, find the sample size of the sample of bags on the Data sheet in the range B2:B51.

To test the null hypothesis for the mean of the sugar bags on the Data sheet, knowing that process variance (population) is 0.0025, what is the appropriate probability table to use? Choose your answer from the dropdown menu in cell C5.

The manager would like to test that the bags weigh 32 oz. (null hypothesis) against the alternative that they do not. Is this a two-sided test? Choose your answer from the dropdown menu in cell C6.

In cell C7, find a one-sided critical value from the appropriate probability table to test the hypothesis at alp

What is/are the sign(s) of the critical value(s) for the test of the hypothesis at alpha = 0.05? Choose your ar

In cell C9, find the one-sided observed level of significance for the test.

Do we need to multiply or divide the value in cell C9 by two? Choose your answer from the dropdown me

In cell C11, find the value of the test statistic.

What is the correct sign of the test statistic value in cell C11? Choose your answer from the dropdown mer

By assessing the answers in cells C7, C8, C11, and C12, do you reject the null hypothesis? Choose your ar

Justify the answer you chose in cell C13. Choose your answer from the dropdown menu in cell C14.

Based on your answer in cell C13, we can conclude at alpha = 0.05 that: Choose your answer from the dro

In cell C16, find the one-sided critical value from the appropriate probability table to test the hypothesis at

What is/are the sign(s) of the critical value(s) for the test of the hypothesis at alpha = 0.10? Choose your ar

By assessing the answers in cells C11, C12, C16, and C17, do you reject the null hypothesis? Choose your

Justify the answer you chose in cell C18. Choose your answer from the dropdown menu in cell C19.

Based on your answer in cell C18, we can conclude at alpha = 0.10 that: Choose your answer from the dro

Based on your answer in cell C13, what type of error might have been made? Choose your answer from th

Based on your answer in cell C18, what type of error might have been made? Choose your answer from th

pha = 0.05.
nswer from the dropdown menu in cell C8.
nu in cell C10.
nu in cell C12.
nswer from the dropdown menu in cell C13.
pdown menu in cell C15.
alpha = 0.10.
nswer from the dropdown menu in cell C17.
answer from the dropdown menu in cell C18.
pdown menu in cell C20.
e dropdown menu in cell C21.
e dropdown menu in cell C22.

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4415
Institution	LCC
Applicant(s)	tjackson@luna.edu
Status	NMHED_REVIEW
Submitted	2025-09-08 03:12 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Henrietta Romero

Chief Academic Officer Email
hromero@luna.edu

Registrar Name
Rachael Lucero

Registrar Email
rlucero@luna.edu

Course's Academic Department
Humanities

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
FDMA

Number
1110

Title
Film History

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
FDMA

Number
1110

Title
Film History

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 appreciation for the history of cinema.
2. Develop knowledge of the key eras in the history of US cinema.
3. Learn the characteristics of major movements in international cinema.
4. Explain technological innovations that were necessary for, and integral to, the advancement of cinema.
5. Recognize the various elements that go into telling a story in cinema.

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.

One of the most important elements of this class is the student's ability to communicate the material presented to them. For the most part the students are not familiar with the films presented in class and most of the films deal with serous and mature subject matter. Over the course of the class the students are guided through the process of communicating these themes both in discussion and written assignments. The course is structured by starting with a brief introduction to the film we will be watching. This introduction includes historical context, the filmmaker's backgrounds and why the film holds significance in the history of filmmaking. After we've watched the film, we will break into discussion. The students are encouraged to discuss the deeper meaning of the film as well as some of the more technical aspects of the production. These discussions are typically part of every class and are crucial in preparing the students for the information that will be requested on exams and papers. The student's ability to discuss the film will also show me how well they comprehended the material and showed attention to detail. Another important series of assignments that helps the student develop communications skills are compare and contrast essays. Many of the historical films shown in class are paired with more modern films that share similar themes and techniques. The students are required to identify the common themes in the film and discuss them in detail. In filmmaking, communication is key to success and the same goes for academia. The ability to successfully communicate instills confidence, understanding, problem solving and collaboration. These are the skills these assignments are designed to refine.

Critical Thinking. Problem Setting; Evidence Acquisition; Evidence 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: Many of the films in the course deal with very heavy and serious subject matter from international perspectives. Some of these topics include Inequality, politics, WWI, WWII, The Cold

War, propaganda and censorship to name a few. In fact, each film has a deeper philosophical meaning. The very first set of films the students are introduced to are Birth of a Nation (1915) and Do the Right Thing (1989). One of the films was a propaganda film designed to bolster popularity on the KKK and the other explores inequality in New York city and the struggle of inequality. These films have completely opposite views on a similar subject matter. Once the films and the context of the films are presented, the students engage in a discussion and an assignment is given to them.

Evidence Acquisition: A two to four paged MLA format essay is assigned to the student. The essay asks the students to compare and contrast the differences between the two films. They are asked to refrain from explaining the plot, but instead, they are asked to focus on the deeper
themes of the film along with whatever topics was discussed in class. How are the films different? How are they the same? Are they dated or have they stayed relevant and why?

Evidence Evaluation: Through guided discussion and open-ended questions, the students are able to pick up on some of the more important
aspects of the film. The one film is a 120-year-old propaganda piece and the other is a more contemporary film that critiques inequality, therefore it is expected that the students discuss the historical context of each, parallels of modern issues,
the lack of empathy on display by certain characters and how those characters are portrayed.

Reasoning / Conclusion: Human history is full of complex behavior and events that have challenged our understanding of each other and our environments. Films reflect our society and ability to understand our environment which makes them a perfect microcosm to exercise critical 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: Over the course of this class, students are exposed to films from all over the world from different time periods. One of the films is a Japanese film released during the 1950's that explores the disillusionment and issues facing Japan after WWII. Another is an early 1900's silent film from Russia that was one of the first films to utilize propaganda in a motion picture. By choosing to examine these two films, the goal is to get the students to think more deeply about other cultures and
their role in world history and the power that moving images have had throughout history as far as to inspire and manipulate.

Ethical reasoning: Despite films being fictional, they still hold great importance in today's society. Many of the films shown in the class present moral and ethical dilemmas to the audience. In Do the Right Thing the main characters are constantly being exposed to racial injustices, inequality and blatant racism. After the film the students are encouraged to engage in a meaningful and respectful conversation discussing the film and the circumstances that could lead to that environment and what society can do to avoid these outcomes.

Assessment: My assessment of discussions, writing assignments and tests allows me to see if the student has a clear understanding of the deeper themes of the films. Being that the themes of the films usually revolve around social and moral dilemmas from different cultures and time periods the student leave the class with a better understanding of civic discourse and how to engage these things in the real world.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan
https://luna.edu/academic_assessment

Application History

Type	username	Text	Timestamp
Submittal	tjackson@luna.edu	Submitted by tjackson@luna.edu	2025-09-08 03:12 PM (US/Mountain)
Authorization	tjackson@luna.edu	tjackson@luna.edu has authorized the application for submittal	2025-09-08 03:12 PM (US/Mountain)
Created	tjackson@luna.edu	Application started by tjackson@luna.edu	2025-09-08 02:41 PM (US/Mountain)

Film History ***Professor Garcia***

Citizen Kane vs *The Social Network*

For this assignment I want you to write a 2 -3 paged paper comparing and contrasting the differences between *Citizen Kane* and *The Social Network*.

In the body of your paper please do not describe the plots as these are films we've already seen so we know the plot. I also do not want you to talk about the technical differences as these are also things we can clearly see while watching the film in class. Instead I want you to discuss the differences between the themes of the film. If the films we watch are about the depiction of race relations, then the essay needs to be about how the depiction of those events compare to each other. NOT about how one was made using old cameras.

The paper must be broken up into two sections. The first section you can make comparisons of the films overall. In the second part of the essay select a specific scene from each film and compare the specific scenes. This will give me a general idea of how the films differed. In order to receive full credit, you must use this method.

The paper needs to be 2 – 3 pages long in MLA format. Make sure to use specific examples from the films. **The final paper must be printed and turned in for class on 2/20/24!**

Notes:

Film History ***Professor Garcia***

Citizen Kane vs *The Social Network*

For this assignment I want you to write a 2 -3 paged paper comparing and contrasting the differences between *Citizen Kane* and *The Social Network*.

In the body of your paper please do not describe the plots as these are films we've already seen so we know the plot. I also do not want you to talk about the technical differences as these are also things we can clearly see while watching the film in class. Instead I want you to discuss the differences between the themes of the film. If the films we watch are about the depiction of race relations, then the essay needs to be about how the depiction of those events compare to each other. NOT about how one was made using old cameras.

The paper must be broken up into two sections. The first section you can make comparisons of the films overall. In the second part of the essay select a specific scene from each film and compare the specific scenes. This will give me a general idea of how the films differed. In order to receive full credit, you must use this method.

The paper needs to be 2 – 3 pages long in MLA format. Make sure to use specific examples from the films. **The final paper must be printed and turned in for class on 2/20/24!**

Notes:

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4416
Institution	LCC
Applicant(s)	tjackson@luna.edu
Status	NMHED_REVIEW
Submitted	2025-09-08 03:34 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Henrietta Romero

Chief Academic Officer Email
hromero@luna.edu

Registrar Name
Rachael Lucero

Registrar Email
rlucero@luna.edu

Course's Academic Department
Humanities

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
FDMA

Number
1545

Title
Introduction to Photography and Digital Imaging

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
FDMA

Number
1545

Title
Introduction to Photography and Digital Imaging

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. Exhibit proper usage of the principles and techniques of photography using digital equipment.
2. Utilize features and techniques of a digital camera with proper use of lenses, settings, and flashes.
3. Create photo collections that represent proper use of technical skills.
4. Demonstrate proficiency in planning, lighting, capturing, and distributing photographic projects which show ability
to create photographs artistically and to tell a story or express an idea.
5. Utilize appropriate software to create original projects.
7. Demonstrate knowledge in post-production of photos as to sizing, sampling, resolution, and exporting.
8. Produce original projects which respect intellectual property of others.
9. Create a digital portfolio of work completed during the 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.

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.

One thing that all students should be aware of is photography and the psychological response that a well composed photograph can have on its viewer. Photos are used for memories, to sell products, as an art form and many other things. In this course, students are taught to identify the technical and functional aspects of photography and apply them to their own photography. Each assignment is attached to a fundamental skill in professional photography like lighting, color or focal length. Presentations and in-class exercises focus on one of those fundamental skills and how to use those skills to get a particular response from the viewer. Over the course of the entire class the students build on each project so that by the end of the class they understand all the basic elements of photography. A typical photography assignment in class starts with a brief introduction to a new fundamental skill with specific instructions and expected outcomes along with any handouts or reading material. A presentation demonstrating the proper implementation of this skill and any new equipment is presented to the students along with
a demonstration of any new equipment that they may be using. Next, we practice the new concepts that have been taught.
Students are encouraged to ask questions along the way and are give feedback and editing help prior to the assignment
being due. When the final photographs are finished, students present their work and are critiqued by the other students based on
rubric standards for the skills and elements demonstrated in the assignment. These critiques encourage

communication and use of technical terminology.
Assessment includes evaluation of photos and metadata to determine if the proper camera settings and fundamental skills were used as demonstrated in
class prior to the student working on their own.

Critical Thinking. Problem Setting; Evidence Acquisition; Evidence 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: Throughout the class multiple photo assignments are given, but the most important assignment is the last one given called “This is me II”. The challenge given to the students it to take all of the technical knowledge they’ve acquired over the class and apply it to photos that convey who they are. The primary challenge here is for the student to blend technique with substance in order to create a series of photos.

Evidence Acquisition: Throughout the course the students are required to take their own photos outside of the classroom own their own time. Class time in primarily used to go over the photos the students have taken for critique and feedback as well as introducing the students to new techniques and equipment. The students get feedback during class so that they can refine their approach
when doing homework and to get comfortable with new techniques and equipment so they can easily start using them in the field. Requiring the student to take all of their homework photos on their own time also allows
them to spend as much time as possible with their gear. The more time they spend taking pictures, the more proficiency is
demonstrated.

Evidence evaluation: Many of the assignments require the student to have a
decent grasp of the technical elements of a photo and the proper use of technical terms. For the “This is Me II” assignment the student must turn in seven photos. Each photo must be unique in terms of content and location, they must utilize different elements of composition that the student is expected to identify and discuss, they must be able to justify each photo's place in the series and at least two photos must use professional quality lighting. Evaluating these aspects of the project helps me understand how much of the content the student grasped and their ability to apply these concepts in a project.

Reasoning & Conclusion: Many of the projects in this course are designed to cause the student to critically think about the technical and creative elements of their photographs. Merging the creative and technical parts of their thought process is a critical skill that will greatly benefit them moving forward.

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.

Much like filmmaking, photography is a visual medium and the students' understanding of visual compositions as they relate to content and geography is critical to understanding the power that photography has in the world. Studying photographers from different time periods and backgrounds gives the student an insight into social structures and civic discourses and how they influence the way the photographs look and the messages they convey. The students are encouraged to compare and contrast the differences in content. If a photographer specializes in pictures of celebrities, the student looks at what kind of messages the photos convey compared to a photographer that specializes in the detritus of steel mills. Students are able to analyze style and emphasis as it pertains to the photographer. The students are guided to ask why these decisions are made and how these photos make them
feel. Their understanding of these techniques and themes will allow them to utilize them in their own work.

The primary role of a photographer is to be behind the camera composing the shots which means an inherit aspect of photography is teamwork and collaboration. Every project in this class requires the student to work with a model for their photos. In many cases this is a friend, family or fellow student. This not only helps the student focus on their photos, it requires them to work with others in a timely manner. The students are also required to shoot with their model in our photo studio which means they must be flexible, timely and commutative. Working with others in this manner is a good exercise in social responsibility and teamwork.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan
https://luna.edu/academic_assessment

Application History

Type	username	Text	Timestamp
Submittal	tjackson@luna.edu	Submitted by tjackson@luna.edu	2025-09-08 03:34 PM (US/Mountain)
Authorization	tjackson@luna.edu	tjackson@luna.edu has authorized the application for submittal	2025-09-08 03:34 PM (US/Mountain)
Created	tjackson@luna.edu	Application started by tjackson@luna.edu	2025-09-08 03:13 PM (US/Mountain)

This is Me II

For this assignment you must take everything you've learned in class and create a photo series of 7 photos that represent any and all things having to do with you and your interests.

- Each photo must be unique in terms of content and location.
- Each photo must utilize a different element of composition.
- You must be able to identify the elements of composition in each photo.
- You must be able to describe how each photo fits into your series.
- You are required to use lighting in at least two photos. One must use three-point lighting and the others can use any lighting arrangement you want.

For this assignment it's incredibly important to think about the subject matter of your photos and what that says about you. You will also be graded on the organization of your files. The photos must be edited, saved as jpegs and ready to show on **Monday, December 4th from 11:00am – 2:00pm.**

Notes:

This is Me II

For this assignment you must take everything you've learned in class and create a photo series of 7 photos that represent any and all things having to do with you and your interests.

- Each photo must be unique in terms of content and location.
- Each photo must utilize a different element of composition.
- You must be able to identify the elements of composition in each photo.
- You must be able to describe how each photo fits into your series.
- You are required to use lighting in at least two photos. One must use three-point lighting and the others can use any lighting arrangement you want.

For this assignment it's incredibly important to think about the subject matter of your photos and what that says about you. You will also be graded on the organization of your files. The photos must be edited, saved as jpegs and ready to show on **Monday, December 4th from 11:00am – 2:00pm.**

Notes:

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4418
Institution	LCC
Applicant(s)	tjackson@luna.edu
Status	NMHED_REVIEW
Submitted	2025-09-08 04:36 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Henrietta Romero

Chief Academic Officer Email
hromero@luna.edu

Registrar Name
Rachael Lucero

Registrar Email
rlucero@luna.edu

Course's Academic Department
STEM

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
ASTR

Number
1115

Title
Introduction to Astronomy

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
ASTR

Number
1115

Title
Introduction to Astronomy

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

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

none

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.

To develop critical thinking skills, students in ASTR 1115 will be engaged through in-class, homework, and laboratory
exercises. Students will practice the scientific method, and engage in assignments using observation, interpretation
using mathematical concepts. An example of an assignment that utilizes these skills is presenting students with case studies
of major astronomical discoveries and having the students analyze the evidence available at the time of the discovery and how it compares to new

evidence or techniques available. Students will identify and gather the data/information to address the problem, explain how to answer
a specified problem, and check the validity of the solution. Students will develop the ability to express quantitative information symbolically, graphically, and in written language, and then present their findings to their peers. Students will apply
reasoning by continued characterization, identify and answer the questions of which astronomical concepts are occurring. Students
will participate in labs and demonstrate their critical thinking skills by determining basic physical principles that can be
tested with the device. Furthermore, the students will perform and analyze the results of these experiments. Students
will form conclusions at the end of each lab, work with peers, and communicate findings using tables and graphs, where appropriate.

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 develop quantitative reasoning, ASTR 1115 students will solve problems related to physical world we live in. Students will have the opportunity to employ the scientific method by using numerical datasets. Students will express quantitative
information symbolically, in graphs and tables, by using mathematical equations, graphically by drawing pictures to interpret and
understand the problem, and by representing motion and vectors in two-dimensional Cartesian plane. Students will
apply their knowledge of astronomy to address and solve specific problems within astronomy. The communication/
representation of quantitative data will be done by tables, maps and written descriptions. Analysis of quantitative
arguments will be done by evaluating the reasonability of the data collected. The application of quantitative models
occurs when students use the numerical data to solve astronomical problems. In the virtual simulation Law of Universal Gravitation lab, students will measure gravitational acceleration near the Earth's surface. The students will
observe and describe the mechanism for circular orbits and distance dependent on the acceleration of gravity. The
students will collect and calculate the data, and distinguish between bound and unbound trajectories during this
experiment.

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

To develop personal & social responsibility, ASTR 1115 Students work in groups, which allows them to develop their
personal and social responsibility. This enables students to develop skills such as teamwork, collaboration and communication, which are used in the real world. Most topics presented in ASTR 1115 will end with a discussion of
human interactions with the environment on Earth and in space. For example, using energy concepts to formulate
reasons for the using and not using of renewable energy sources. Another example, is how solar flares

expelled from
the Sun can disrupt electronic equipment, or produce brilliant auroras at lower latitudes on Earth. Students engage in
concepts of human interaction with climate change. Students identify some causes that are affecting climate change
such as hydrocarbon emissions, possible meteors and asteroids from space impacting on Earth, and work as a team to
suggest on how it can be minimized.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan
https://luna.edu/academic_assessment

Application History

Type	username	Text	Timestamp
Submittal	tjackson@luna.edu	Submitted by tjackson@luna.edu	2025-09-08 04:36 PM (US/Mountain)
Authorization	tjackson@luna.edu	tjackson@luna.edu has authorized the application for submittal	2025-09-08 04:36 PM (US/Mountain)
Created	tjackson@luna.edu	Application started by tjackson@luna.edu	2025-09-08 03:46 PM (US/Mountain)

Astronomy 1115; Astronomy

Sample Assessment

Students will calculate the altitude of the Sun at noon during a certain time of the calendar year. This problem links to Essential Skill: Quantitative Reasoning as students will calculate the altitude of the sun at noon in Las Vegas, New Mexico on June 21st.

What is the altitude of the Sun at noon on June 21 as seen from Las Vegas, New Mexico (35.6° N Latitude)? Show ALL WORK!

Astronomy 1115; Astronomy

Sample Assessment

Students will calculate the altitude of the Sun at noon during a certain time of the calendar year. This problem links to Essential Skill: Quantitative Reasoning as students will calculate the altitude of the sun at noon in Las Vegas, New Mexico on June 21st.

What is the altitude of the Sun at noon on June 21 as seen from Las Vegas, New Mexico (35.6° N Latitude)? Show ALL WORK!

NEW MEXICO HIGHER EDUCATION DEPARTMENT

Fostering Student Success from Cradle to Career

General Education Request Application

Application Number	4420
Institution	LCC
Applicant(s)	tjackson@luna.edu
Status	NMHED_REVIEW
Submitted	2025-09-08 04:42 PM (US/Mountain)

Gened Request Form

Contact Information

Chief Academic Officer Name
Henrietta Romero

Chief Academic Officer Email
hromero@luna.edu

Registrar Name
Rachael Lucero

Registrar Email
rlucero@luna.edu

Course's Academic Department
STEM

Is this a Application a Re-Submission
no

Institutional Course Information

Prefix
ASTR

Number
1115L

Title
Introduction to Astronomy Laboratory

Number of credits
1

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
ASTR

Number
1115

Title
Introduction to Astronomy

New Mexico Common Course Information

Prefix
ASTR

Number
1115L

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

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

none

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.

To develop critical thinking skills, students in ASTR 1115L will be engaged through in-class, homework, and laboratory
exercises. Students will practice the scientific method, and engage in assignments using observation, interpretation
using mathematical concepts. Students will identify and gather the data/information to address the problem, explain
how to answer a specified problem, and check the validity of the solution. Students will develop the ability to express

quantitative information symbolically, graphically, and in written language. Students will apply reasoning by continued characterization, identify and answer the questions of which astronomical concepts are occurring. Students
will participate in labs and demonstrate their critical thinking skills by determining basic physical principles that can be
tested with the device. Furthermore, the students will perform and analyze the results of these experiments. Students
will form conclusions at the end of each lab.

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

To develop quantitative reasoning, ASTR 1115L students will solve problems related to physical world we live in. Students will be practicing the scientific method by using numerical datasets. Students will express quantitative
information symbolically by using mathematical equations, graphically by drawing pictures to interpret and understand the problem, and by representing motion and vectors in two-dimensional Cartesian plane. Students will
apply their knowledge of astronomy to address and solves specific problems within astronomy. The communication/
representation of quantitative data will be done by tables, maps and written descriptions. Analysis of quantitative
arguments will be done by evaluating the reasonability of the data collected. The application of quantitative models
occurs when students use the numerical data to solve astronomical problems. In the virtual simulation Law of Universal Gravitation lab, students will measure gravitational acceleration near the Earth's surface. The students will
observe and describe the mechanism for circular orbits and distance dependent on the acceleration of gravity. The
students will collect and calculate the data, and distinguish between bound and unbound trajectories during this
experiment.

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

To develop personal & social responsibility, ASTR 1115L Students work in groups, which allows them to develop their
personal and social responsibility. This enables students to develop skills such as teamwork, collaboration and communication, which are used in the real world. Most topics presented in ASTR 1115L will end with a discussion of
human interactions with the environment on Earth and in space. For example, using energy concepts to formulate
reasons for the using and not using of renewable energy sources. Another example, is how solar flares expelled from
the Sun can disrupt electronic equipment, or produce brilliant auroras at lower latitudes on Earth. Students engage in
concepts of human interaction with climate change. Students identify some causes that are affecting climate change
such as hydrocarbon emissions, possible meteors and asteroids from space impacting on Earth, and work as a

team to
suggest on how it can be minimized.

Section D. Assessment Plan

Link to Institution's General Education Assessment Plan
https://luna.edu/academic_assessment

Application History

Type	username	Text	Timestamp
Submittal	tjackson@luna.edu	Submitted by tjackson@luna.edu	2025-09-08 04:42 PM (US/Mountain)
Authorization	tjackson@luna.edu	tjackson@luna.edu has authorized the application for submittal	2025-09-08 04:42 PM (US/Mountain)
Created	tjackson@luna.edu	Application started by tjackson@luna.edu	2025-09-08 04:36 PM (US/Mountain)

Astronomy 1115L; Astronomy Lab
Sample Assessment
Computation formulas and problems for the Law of Universal Gravitation Lab are listed below. These problems link to Essential Skill: Quantitative Reasoning as students will collect data and calculate gravity acceleration for various objects.

Labster

Virtual Lab Manual

Law of Universal Gravitation:
Use gravity to orbit the moon

Synopsis

Can you imagine having a better teacher in the Law of Universal Gravitation than Sir Isaac Newton? In this simulation, you will learn about the difference between mass and weight. Newton himself will get on the scales and you will perform a pendulum experiment which will let you define the gravitational acceleration near the surface of the Earth. In order to deduce Newton's Law of Gravitation, you will investigate how gravitational acceleration is dependent on masses of objects and the distance in between them. In your first mission, you will change the mass of the Earth and determine the "mass dependence" of the gravitational acceleration. But watch out! With great power in this initial mission comes great responsibility during your last mission...

Perform a thought experiment

Enter the mind of Newton and learn why the moon does not just crash onto the surface of the Earth. Observe how the initial tangential velocity affects the orbit of a cannon ball around the Earth and realize the "distance dependence" of the gravitational acceleration. You are now one step closer to guiding a spacecraft with astronauts on their mission to orbit the moon.

The solar system

In order to orbit the moon you have to know everything about the theory of gravity. In this simulation, you can learn all about it by having a look at the holo-table, where you can see the solar system orbit around the sun right in front of you. You will also learn the basic properties of the known planets of our solar system.

Orbit the moon

Changing the mass of the Earth during your first mission will affect the preset velocity of a spacecraft for entering a lunar orbit. Will you be able to find the correct velocity for entering circular orbit around the moon by changing the trajectories of the orbiting spacecraft?

Learning Objectives

At the end of this simulation, you will be able to...

- Understand the difference between weight and mass.
- Measure gravitational acceleration near the Earth's surface.
- Describe the mechanism for circular orbits.
- Describe the distance dependence of g.
- Distinguish between bound and unbound trajectories

Techniques in Lab

- Pendulum
- Thought experiment

Theory

Newton's Laws of Motion

Dynamics is the study of how forces affect the motion of objects and systems. It considers the causes of motion of objects and systems of interest, where a system is anything being analyzed. The foundation of dynamics are the laws of motion stated by Isaac Newton (1642–1727). These laws provide an example of the breadth and simplicity of principles under which nature functions.

Simple Pendulum

A simple pendulum (see Figure 1) is a simplified version of a 'real' pendulum where the following simplifications are assumed:

- The thread has no mass and cannot extend
- The mass attached to the thread is a point mass
- The motion is two-dimensional
- There is no friction or air resistance

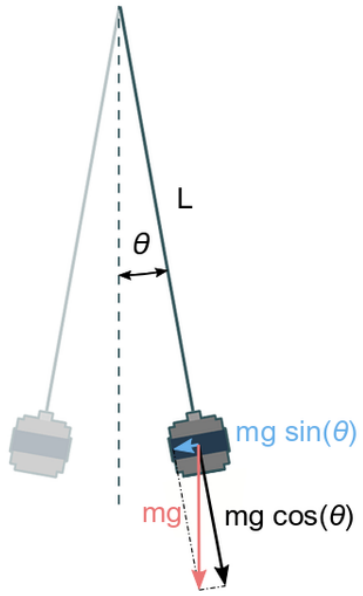


Figure 1: A simple pendulum with thread length L, mass m, angular displacement θ.

Derivation of oscillation period and gravitational acceleration

Assumptions presented in the theory of simple pendulum the differential equation describing the motion of a simple pendulum is presented in the first row on figure 2, where Newton's second law of motion is applied to a rotational system (not covered in the theory section of this simulation). Here the mass m cancels, i.e. the motion is independent of the attached mass.

For small displacements (small angle approximation) the equation can be further simplified, as presented in the second row on figure 2, which is the differential equation of a harmonic oscillator. With the boundary conditions (maximum displacement at t=0 and zero angular velocity at t=0) the solution for the displacement θ(t) can be determined, as in the third row on figure 2.

From the frequency, the oscillation period can be calculated which can be used to determine the gravitational acceleration g by measuring the oscillation period (and known thread length L), as depicted in the last row on figure 2.

a) $-mg\sin(\theta)L = mL^2\frac{\partial^2\theta}{\partial t^2} \longrightarrow \frac{\partial^2\theta}{\partial t^2} + \frac{g}{L}sin(\theta) = 0$

b) $\sin(\theta) \approx \theta \longrightarrow \frac{\partial^2\theta}{\partial t^2} = \frac{g}{L}\theta$

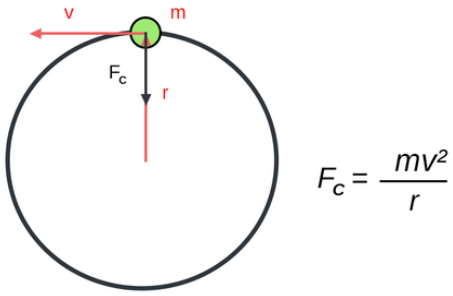
c) $\theta(0) = \theta_{max} \quad \frac{\partial\theta}{\partial t}(0) = 0 \longrightarrow \theta(t) = \theta_{max}\cos(\sqrt{\frac{g}{L}}t)$

d) $T = 2\pi\sqrt{\frac{L}{g}} \longrightarrow g = \frac{4\pi^2 L}{T^2}$

Figure 2: Equations for derivations of oscillation period and gravitational acceleration.

Centripetal force

The centripetal force is the force that acts on an object to keep it moving in a circular path. The magnitude of the centripetal force for an object with mass m moving on a circular path (with radius r) at a constant tangential velocity v is given by $F_c=mv^2/r$ (see Figure 3).



$$F_c = \frac{mv^2}{r}$$

Figure 3: Schematic of circular movement of an object with mass m

It can be useful to write the centripetal force in terms of angular velocity ω, given by ω = vr so that $F_c=mr\omega^2$. The orbital period is given by T= 2π/ω, so the centripetal force can be expressed as $F_c=mr(2\pi/T)^2$. The centripetal acceleration (following Newton's second law of motion) is given by v^2/r and radially directed towards the center of the circular path.

As follows from $F_c=mr(2\pi/T)^2$, the centripetal acceleration of e.g., a satellite can be calculated when the radius and the period T are given. Knowing the distance of the moon from the earth and the time it takes the moon for one round-trip, Newton calculated the centripetal acceleration of the moon from which he deduced the inverse square law of gravitation.

Law of Universal Gravitation

Isaac Newton published his Law of Universal Gravitation 1686 in his famous work *Philosophiæ Naturalis Principia Mathematica*. The law states that **every object with mass is attracting every other object with mass in the universe**. Newton also gives an expression to calculate the gravitational force F_G acting between two objects with mass m and M separated by a distance r (see Figure 4).

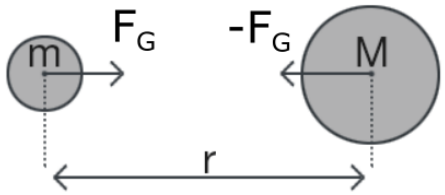


Figure 4: Schematic of gravitational forces acting between objects with masses m and M separated by a distance r (distance between the center of masses).

Derivation of the Law of Universal Gravitation

In the following we try to understand how Newton came up with his law by considering some basic principles and observations involving an object (mass m), the Earth (mass M) and the moon:

- **g independent of m (F_G=mg):**

Galileo demonstrated that on Earth (mass M) all objects fall at the same rate (neglecting air resistance), i.e. the gravitational acceleration g is independent of m. Thus the gravitational force must be proportional to m and can be written as F_G=mg (Newton's second law of motion). The gravitational acceleration g is independent of m but might depend on M and r, i.e. g is a function of M and r.

- **g proportional to M (g~M):**

The dependence of g on M is hard to measure (except you are in a virtual lab where you can change the mass of the Earth M) but since Newton's third law of motion holds we know that the force the Earth (mass M) is exerting on the object with mass m must be of the same magnitude than the force the object (mass m) is exerting on the Earth (mass M). Thus, the F_g and also g must be proportional to M.

- **g proportional to $1/r^2$ (inverse square law):**

Newton's great idea was to generalize the gravitational force and to apply the concept not only to objects on Earth but to all objects, including the moon.

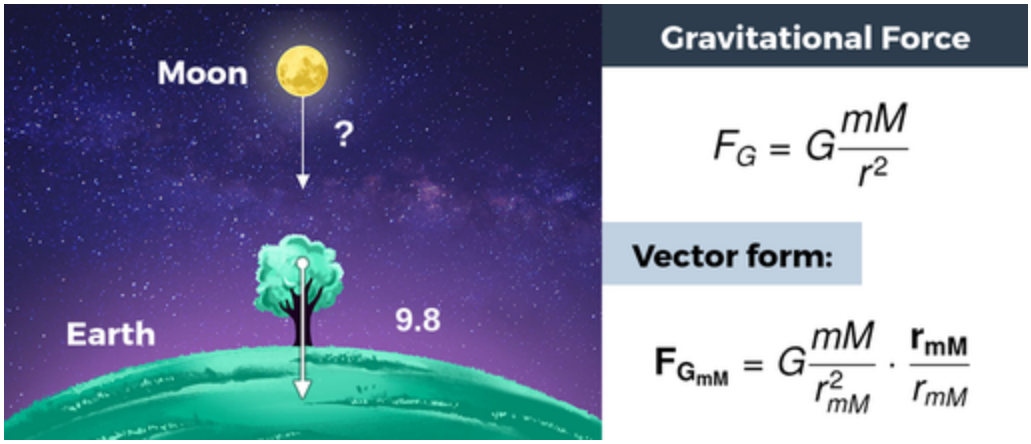


Figure 5: Newton assumed that not only the apple but also the moon should be attracted to the Earth. By deducing the gravitational acceleration of the moon, Newton came up with the inverse square law.

He identified the gravitational acceleration as centripetal acceleration which keeps the moon in orbit and he was therefore able to estimate the gravitational acceleration at a distance (Earth - moon) which is roughly 60 times the radius of the Earth. Assuming a circular orbit the acceleration is approximately 3,600 times smaller than on the surface of the Earth. From that he 'guessed' the inverse square law.

Combining the considerations above and adding the gravitational constant G we arrive at the expression for gravitational force F_G depicted on the right upper side of the figure 5.

Applying the law, Newton was able to calculate the orbits of planets and indeed found that the most general, bound trajectory (orbit) is an ellipse - in agreement with Kepler's first law of planetary motion. Additionally, Newton could show mathematically that all possible trajectories of an object in a gravitational field can be described by conic sections.

Vector form:

Until now we simplified our discussion and considered the magnitude of the gravitational force only. In vector form the gravitational force acting on mass m due to the attraction of mass M is given by the equation on the lower right side of the figure 5, where $\mathbf{r_{mM}}$ is given by $\mathbf{r_M}$-$\mathbf{r_m}$ and $r_{mM} = |\mathbf{r_M}\text{-}\mathbf{r_m}|$.

Gravitational Constant

The constant G is called the universal gravitational constant and was determined by Cavendish to be $G = 6.67 \times 10^{-11}$ N m^2/kg^2 . The word 'universal' indicates that scientists think that this constant applies to masses of any composition and that it is the same throughout the universe. The value of G is an incredibly small number, showing that the force of gravity is very weak.

Cavendish Experiment

Performed in 1897, the Cavendish Experiment aimed to determine the value of G, the universal gravitational constant. Cavendish constructed an apparatus (shown in the figure 6) where suspended masses would be attracted to another set of masses by gravity. This attraction created a torsion (twisting) in the suspending wire which was painstakingly measured to find the value of G. This experiment took place around a century after Newton's original publication.

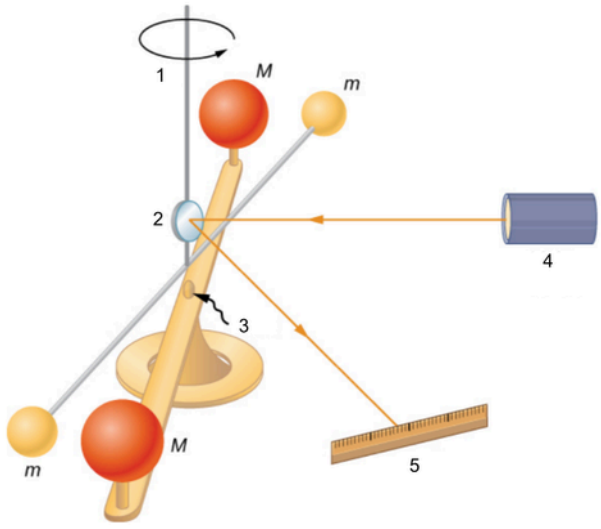


Figure 6: Cavendish used an apparatus similar to this to measure the gravitational attraction between two spheres (m) suspended from a wire and two stationary spheres (M). (Setup: 1:wire, 2:mirror, 3:pivot, 4:light source, 5:scale)

Mass and Weight

Mass is a fundamental property of a physical object, a measure of its inertia (according to Newton's second law of motion). In general, mass is a measure of the amount of matter in an object. The mass of an object is independent of the object's location (the mass of an object is the same on the Earth, the moon or in deep space). The SI unit of mass is kg. The force acting on an object due to gravitation F_G=mg is called weight, as illustrated in the upper image of Figure 7. If the gravitational acceleration and the weight are known, the mass of an object can be determined.

A weighing scale does not measure the weight of an object but rather a force with the same magnitude as the normal force which acts on the object and is supplied by the scale. This situation is depicted in the lower image of Figure 7. When the net force on the apple is zero (the apple is not accelerating) the normal force (F_N) has the same magnitude as the weight (F_G) of the apple. In other words: The scale is pushing upwards with a force equal in magnitude to the weight of the apple. This force (indicated by the red arrow in the free body diagram of the scale) is actually measured by the scale and equals the weight of the apple in case of zero net force.

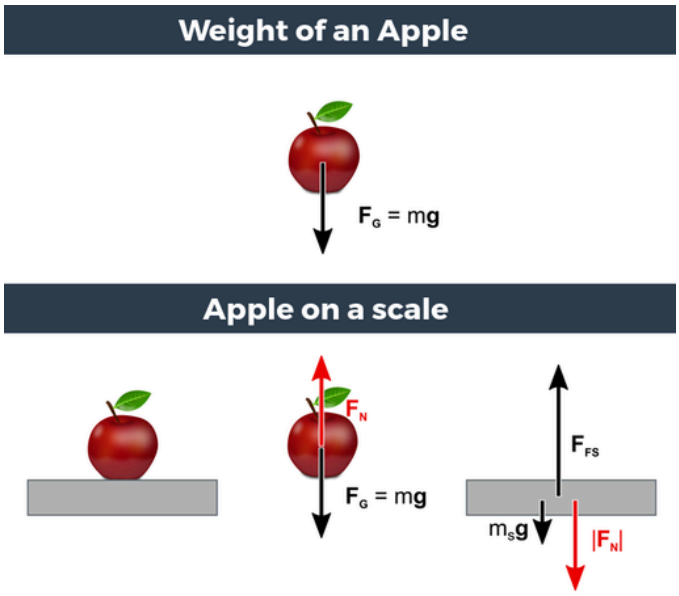


Figure 7: The weight of an apple of mass m is given by F_G=mg. Apple on a scale (indicated by the gray rectangle) and the two corresponding free body diagrams (right). F_G=mg is the weight of the apple, F_N (or N) the normal force, msg the weight of the scale, F_{FS} is the normal force the floor is exerting on the scale.

Orbiting Cannonballs

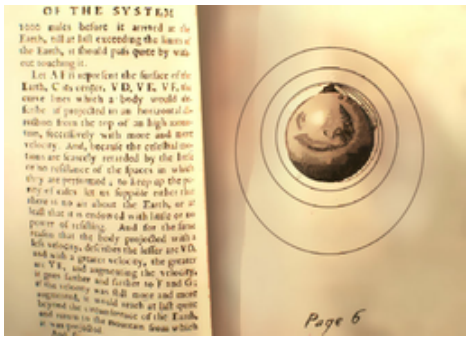


Figure 8: Imitation of Newton's famous drawing.

An orbit is the curved path taken through space by one body around another due to the gravitational force between them. This path is often regularly repeating, for example the Earth moving around the Sun. A classic way to understand orbits is to consider throwing a ball horizontally on Earth. The ball will accelerate down due to gravity, coming to rest on the ground having covered some horizontal distance. Over small distances, the Earth appears flat, but at larger scales we must account for the curvature of the planet. If we throw the ball fast enough, by the time the ball would have landed on a flat plane, the Earth's surface will have curved away, leaving the ball stuck in perpetual free-fall; this is a body in orbit. The velocity needed for a small mass to orbit the Earth near the surface is around 8 km/s.

When we look at an orbit where one body has much more mass than the other (for example the International Space Station orbiting Earth), it may appear like the larger body is unaffected and remains stationary. However, both bodies are in fact orbiting around their shared center of mass. The shape and speed of an orbit can be described using Kepler's Laws of planetary motion.

Planetary Motion (Kepler's Laws)

Kepler's laws describe the motion of planets around the sun and were published between 1609 and 1619 by Johannes Kepler.

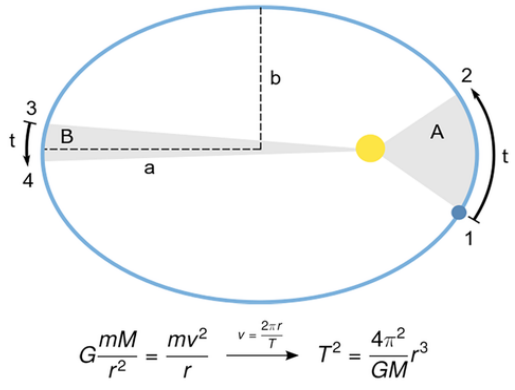


Figure 9: Illustration of the first and second law. Note, that all planets (except Mercury) have nearly circular orbits and that the given illustration is highly exaggerated.

- Kepler's first law

Every planet moves along an ellipse, with the sun located at a focus of the ellipse (To be more precise: sun and planets orbit their barycenter).

- Kepler's second law

An imaginary line joining any planet to the sun sweeps out equal areas in equal times. This law is illustrated in Figure 9: The time it takes a planet to move from position 1 to 2, sweeping out area A is exactly the time taken to move from position 3 to 4, sweeping area B, these areas are the same, A=B. As can be shown, this law is a consequence of conservation of angular momentum.

- Kepler's third law

The square of the period of any planet is proportional to the cube of the semi-major axis of the orbit, i.e. $T^2 \sim a^3$, with T denoting the period and a the semi-major axis of the orbit (see Figure 9). For the special case of a circular orbit (a=r) this can be shown by equating the gravitational force with the centripetal force and substituting the orbital velocity:

Solar System

In the following table, some basic properties of the known planets of our solar system are listed.

Name	**Distance from Sun [AU]**	**Revolution Period [y]**	**Diameter [km]**	**Mass [10^{23}kg]**	**Density [g/cm^3]**
Mercury	0.39	0.24	4878	3.3	5.4
Venus	0.72	0.62	12120	48.7	5.2
Earth	1.00	1.00	12756	59.8	5.5
Mars	1.52	1.88	6787	6.4	3.9
Jupiter	5.20	11.86	142984	18991	1.3
Saturn	9.54	29.46	120536	5686	0.7
Uranus	19.18	84.07	51118	866	1.3
Neptune	30.06	164.82	49660	1030	1.6

[AU]: Astronomical Unit is the distance from Earth to Sun.

Barycenter

For simplicity, let's consider a system of two bodies orbiting each other. Then the barycenter is the center of mass of the two bodies which is also the point around which they both orbit (see Figure 10).

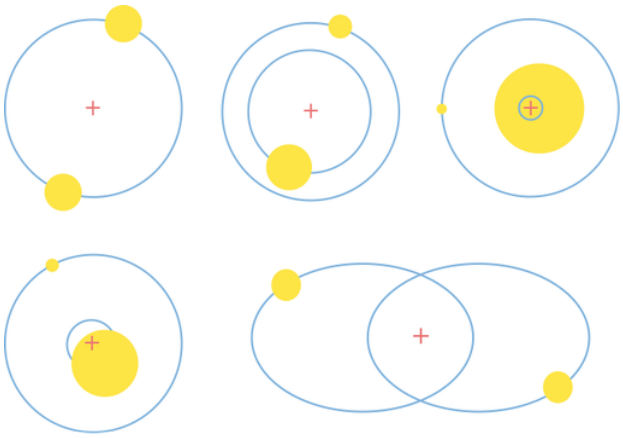


Figure 10: Different two-body systems with indicated orbits (blue) and barycenters (red).

So strictly speaking, the moon is not orbiting Earth but both orbit the barycenter which lies well beneath the Earth's surface. Similarly, the planets of the solar system and the sun orbit the barycenter of the solar system (center of mass of all objects in the solar system) which again, is close to the sun but constantly changing (since the center of mass changes due to the motion of the planets). This causes a 'wobbling'- motion of the sun. This is used for the search of extrasolar planets as the detection of a wobbling star is an indication of the gravitational influence of orbiting planets.

Bound and Unbound Trajectories

An object 'm' in the gravitational field of another object 'M' can move on a bound (orbit) or unbound trajectory. Bound and unbound trajectories can be described by conic sections, and calculated using the concept of conservation of energy.

Conic Sections

In physics, the paths that can be taken by an object under gravitational attraction are called the conic sections. In mathematics, these curves are obtained by taking a slice from a cone at different angles. These shapes are the circle, the ellipse, the parabola and the hyperbola. The circle and ellipse are **bound orbits** (like planets around the sun), and the parabola and hyperbola are **unbound** (like a deflecting rocketship on a slingshot orbit).

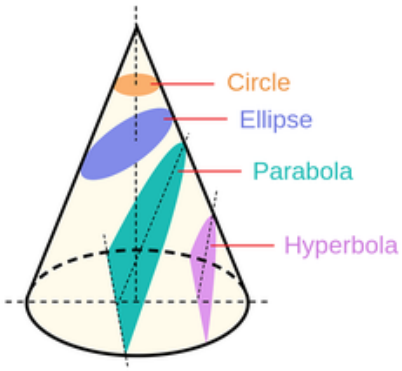


Figure 11: Illustration of the four different conic sections.

Calculating Bound and Unbound Trajectories

To determine whether an object with mass 'm' will follow a bound or unbound trajectory, it is useful to apply conservation of energy and calculate the kinetic and gravitational potential energy of the object in the gravitational field of mass 'M' .

$E_{kinetic} > E_{potential}$: Object 'm' has enough energy to escape the gravitational pull of object 'M' and follows an unbound orbit, escaping to infinity.

$E_{kinetic} < E_{potential}$: The velocity of object 'm' is too small to escape the gravitational attraction of object 'M' and is stuck in freefall around object 'M'.

The kinetic energy $E_{kinetic}$ and the gravitational potential energy $E_{potential}$ of an object with mass 'm' in the gravitational field of mass 'M' can be described by equations in the escape velocity theory page.

Escape velocity

Even though the gravitational force acts infinitely far, an object can escape the gravitational attraction. The minimum velocity needed for an object to escape from the gravitational influence of a massive body is called escape velocity. It can be calculated by applying conservation of energy and equating the total energy of the object at an initial distance R from the massive body with the energy when the object reaches 'infinity', with a velocity equal 0, presented in the second row in figure 12, from which v_{esc} can be derived, presented in the third row of the figure 12, which is independent of the object's mass 'm' and true for ballistic motion (no propulsion).

If the body moves with escape velocity but not directly away from the object, it will escape in a curved path (escape orbit) which is parabolic. Above that velocity, the path will be hyperbolic, below the object cannot escape the gravitational influence and will enter a bound orbit. As Newton derived from his law of universal gravitation, the possible trajectories can be described by conic sections.

1) $$E_{kin} = \frac{1}{2}mv^2 \quad E_{pot} = -G\frac{mM}{r}$$

2) $$\frac{1}{2}mv_{esc}^2 - G\frac{mM}{R} = \frac{1}{2}m0 - G\frac{mM}{\infty}$$

3) $$v_{esc} = \sqrt{\frac{2GM}{R}}$$

Figure 12: Equations for derivations of escape velocity.

Limitations of Newton's Gravitation

Newton's law of universal gravitation accurately predicts much of what we see within our solar system. Nevertheless, many phenomena have shown a discrepancy from what Newton's laws predict, including the orbit of Mercury and the effect that gravity has on light.

The 'speed' of gravitation

Also, Newton inherently assumed that gravitation is an *action-at-a-distance* force. That is, without physical contact, any change in the position of one mass is instantly communicated to all other masses. This assumption does not come from any first principle, as Newton's theory simply does not address the question. With Einstein's theory of special relativity

the *action-at-a-distance* assumption was dismissed (the speed limit in the universe is the speed of light) and in 1915 he published his theory of general relativity.

General Relativity

General Relativity is a theory of space-time geometry and how mass (and acceleration) distort and interact with that space-time (see Figure 13).

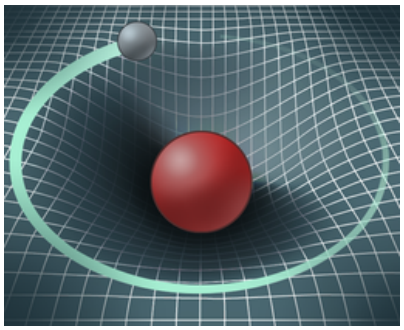


Figure 13: A smaller mass orbiting in the distorted space-time of a larger mass. In fact, all mass or energy distorts space-time.

It is not a theory of gravitational forces. For weak gravitational fields, the results of general relativity do not differ significantly from Newton's law of gravitation. But for intense gravitational fields, the results diverge, and general relativity has been shown to predict the correct results. Even in our Sun's relatively weak gravitational field at the distance of Mercury's orbit, we can observe the effect. Starting in the mid-1800s, Mercury's elliptical orbit has been carefully measured. However, although it is elliptical, its motion is complicated. But general relativity correctly predicts the measurements. Since then, many measurements, such as the deflection of light of distant objects by the Sun, have verified that general relativity correctly predicts the observations.

Astronomy 1115L; Astronomy Lab
Sample Assessment
Computation formulas and problems for the Law of Universal Gravitation Lab are listed below. These problems link to Essential Skill: Quantitative Reasoning as students will collect data and calculate gravity acceleration for various objects.

Labster

Virtual Lab Manual

Law of Universal Gravitation:
Use gravity to orbit the moon

Synopsis

Can you imagine having a better teacher in the Law of Universal Gravitation than Sir Isaac Newton? In this simulation, you will learn about the difference between mass and weight. Newton himself will get on the scales and you will perform a pendulum experiment which will let you define the gravitational acceleration near the surface of the Earth. In order to deduce Newton's Law of Gravitation, you will investigate how gravitational acceleration is dependent on masses of objects and the distance in between them. In your first mission, you will change the mass of the Earth and determine the "mass dependence" of the gravitational acceleration. But watch out! With great power in this initial mission comes great responsibility during your last mission...

Perform a thought experiment

Enter the mind of Newton and learn why the moon does not just crash onto the surface of the Earth. Observe how the initial tangential velocity affects the orbit of a cannon ball around the Earth and realize the "distance dependence" of the gravitational acceleration. You are now one step closer to guiding a spacecraft with astronauts on their mission to orbit the moon.

The solar system

In order to orbit the moon you have to know everything about the theory of gravity. In this simulation, you can learn all about it by having a look at the holo-table, where you can see the solar system orbit around the sun right in front of you. You will also learn the basic properties of the known planets of our solar system.

Orbit the moon

Changing the mass of the Earth during your first mission will affect the preset velocity of a spacecraft for entering a lunar orbit. Will you be able to find the correct velocity for entering circular orbit around the moon by changing the trajectories of the orbiting spacecraft?

Learning Objectives

At the end of this simulation, you will be able to...

- Understand the difference between weight and mass.
- Measure gravitational acceleration near the Earth's surface.
- Describe the mechanism for circular orbits.
- Describe the distance dependence of g.
- Distinguish between bound and unbound trajectories

Techniques in Lab

- Pendulum
- Thought experiment

Theory

Newton's Laws of Motion

Dynamics is the study of how forces affect the motion of objects and systems. It considers the causes of motion of objects and systems of interest, where a system is anything being analyzed. The foundation of dynamics are the laws of motion stated by Isaac Newton (1642–1727). These laws provide an example of the breadth and simplicity of principles under which nature functions.

Simple Pendulum

A simple pendulum (see Figure 1) is a simplified version of a 'real' pendulum where the following simplifications are assumed:

- The thread has no mass and cannot extend
- The mass attached to the thread is a point mass
- The motion is two-dimensional
- There is no friction or air resistance

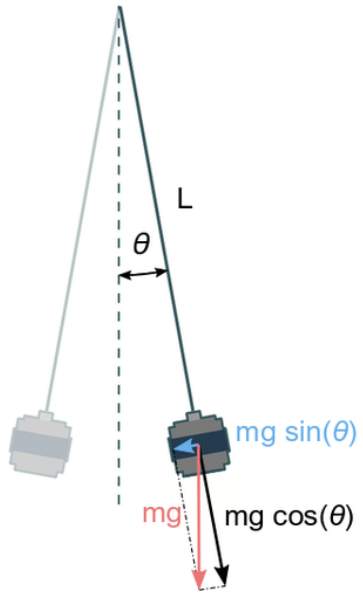


Figure 1: A simple pendulum with thread length L, mass m, angular displacement θ.

Derivation of oscillation period and gravitational acceleration

Assumptions presented in the theory of simple pendulum the differential equation describing the motion of a simple pendulum is presented in the first row on figure 2, where Newton's second law of motion is applied to a rotational system (not covered in the theory section of this simulation). Here the mass m cancels, i.e. the motion is independent of the attached mass.

For small displacements (small angle approximation) the equation can be further simplified, as presented in the second row on figure 2, which is the differential equation of a harmonic oscillator. With the boundary conditions (maximum displacement at t=0 and zero angular velocity at t=0) the solution for the displacement θ(t) can be determined, as in the third row on figure 2.

From the frequency, the oscillation period can be calculated which can be used to determine the gravitational acceleration g by measuring the oscillation period (and known thread length L), as depicted in the last row on figure 2.

a) $-mg\sin(\theta)L = mL^2\frac{\partial^2\theta}{\partial t^2} \longrightarrow \frac{\partial^2\theta}{\partial t^2} + \frac{g}{L}sin(\theta) = 0$

b) $\sin(\theta) \approx \theta \longrightarrow \frac{\partial^2\theta}{\partial t^2} = \frac{g}{L}\theta$

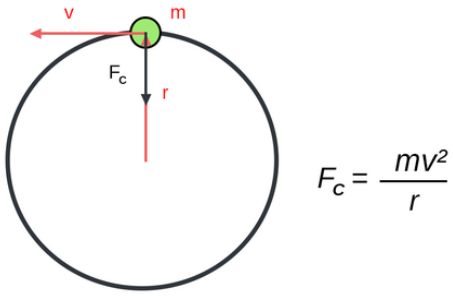
c) $\theta(0) = \theta_{max} \quad \frac{\partial\theta}{\partial t}(0) = 0 \longrightarrow \theta(t) = \theta_{max}\cos(\sqrt{\frac{g}{L}}t)$

d) $T = 2\pi\sqrt{\frac{L}{g}} \longrightarrow g = \frac{4\pi^2 L}{T^2}$

Figure 2: Equations for derivations of oscillation period and gravitational acceleration.

Centripetal force

The centripetal force is the force that acts on an object to keep it moving in a circular path. The magnitude of the centripetal force for an object with mass m moving on a circular path (with radius r) at a constant tangential velocity v is given by $F_c=mv^2/r$ (see Figure 3).



$$F_c = \frac{mv^2}{r}$$

Figure 3: Schematic of circular movement of an object with mass m

It can be useful to write the centripetal force in terms of angular velocity ω, given by ω = vr so that $F_c=mr\omega^2$. The orbital period is given by T= 2π/ω, so the centripetal force can be expressed as $F_c=mr(2\pi/T)^2$. The centripetal acceleration (following Newton's second law of motion) is given by v^2/r and radially directed towards the center of the circular path.

As follows from $F_c=mr(2\pi/T)^2$, the centripetal acceleration of e.g., a satellite can be calculated when the radius and the period T are given. Knowing the distance of the moon from the earth and the time it takes the moon for one round-trip, Newton calculated the centripetal acceleration of the moon from which he deduced the inverse square law of gravitation.

Law of Universal Gravitation

Isaac Newton published his Law of Universal Gravitation 1686 in his famous work *Philosophiæ Naturalis Principia Mathematica*. The law states that **every object with mass is attracting every other object with mass in the universe**. Newton also gives an expression to calculate the gravitational force F_G acting between two objects with mass m and M separated by a distance r (see Figure 4).

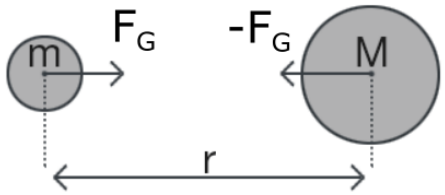


Figure 4: Schematic of gravitational forces acting between objects with masses m and M separated by a distance r (distance between the center of masses).

Derivation of the Law of Universal Gravitation

In the following we try to understand how Newton came up with his law by considering some basic principles and observations involving an object (mass m), the Earth (mass M) and the moon:

- **g independent of m (F_G=mg):**

Galileo demonstrated that on Earth (mass M) all objects fall at the same rate (neglecting air resistance), i.e. the gravitational acceleration g is independent of m. Thus the gravitational force must be proportional to m and can be written as F_G=mg (Newton's second law of motion). The gravitational acceleration g is independent of m but might depend on M and r, i.e. g is a function of M and r.

- **g proportional to M (g~M):**

The dependence of g on M is hard to measure (except you are in a virtual lab where you can change the mass of the Earth M) but since Newton's third law of motion holds we know that the force the Earth (mass M) is exerting on the object with mass m must be of the same magnitude than the force the object (mass m) is exerting on the Earth (mass M). Thus, the F_g and also g must be proportional to M.

- **g proportional to $1/r^2$ (inverse square law):**

Newton's great idea was to generalize the gravitational force and to apply the concept not only to objects on Earth but to all objects, including the moon.

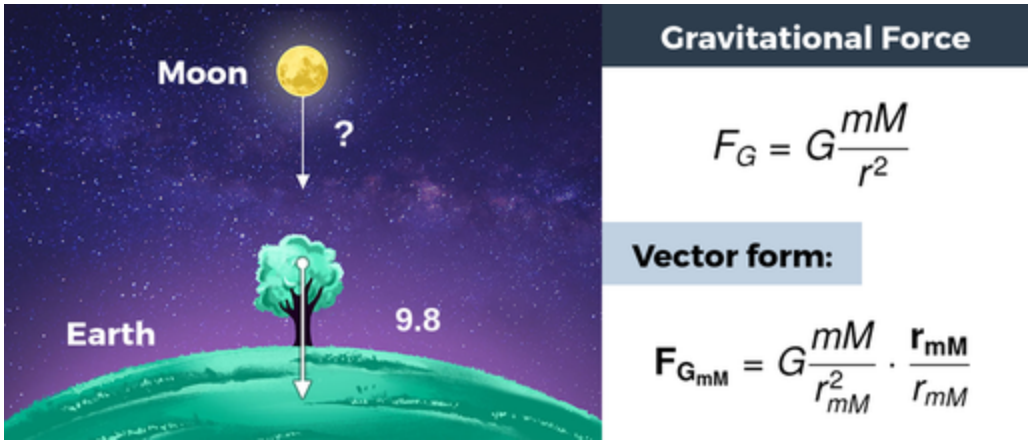


Figure 5: Newton assumed that not only the apple but also the moon should be attracted to the Earth. By deducing the gravitational acceleration of the moon, Newton came up with the inverse square law.

He identified the gravitational acceleration as centripetal acceleration which keeps the moon in orbit and he was therefore able to estimate the gravitational acceleration at a distance (Earth - moon) which is roughly 60 times the radius of the Earth. Assuming a circular orbit the acceleration is approximately 3,600 times smaller than on the surface of the Earth. From that he 'guessed' the inverse square law.

Combining the considerations above and adding the gravitational constant G we arrive at the expression for gravitational force F_G depicted on the right upper side of the figure 5.

Applying the law, Newton was able to calculate the orbits of planets and indeed found that the most general, bound trajectory (orbit) is an ellipse - in agreement with Kepler's first law of planetary motion. Additionally, Newton could show mathematically that all possible trajectories of an object in a gravitational field can be described by conic sections.

Vector form:

Until now we simplified our discussion and considered the magnitude of the gravitational force only. In vector form the gravitational force acting on mass m due to the attraction of mass M is given by the equation on the lower right side of the figure 5, where $\mathbf{r_{mM}}$ is given by $\mathbf{r_M}$-$\mathbf{r_m}$ and $r_{mM} = |\mathbf{r_M}\text{-}\mathbf{r_m}|$.

Gravitational Constant

The constant G is called the universal gravitational constant and was determined by Cavendish to be $G = 6.67 \times 10^{-11}$ N m^2/kg^2 . The word 'universal' indicates that scientists think that this constant applies to masses of any composition and that it is the same throughout the universe. The value of G is an incredibly small number, showing that the force of gravity is very weak.

Cavendish Experiment

Performed in 1897, the Cavendish Experiment aimed to determine the value of G, the universal gravitational constant. Cavendish constructed an apparatus (shown in the figure 6) where suspended masses would be attracted to another set of masses by gravity. This attraction created a torsion (twisting) in the suspending wire which was painstakingly measured to find the value of G. This experiment took place around a century after Newton's original publication.

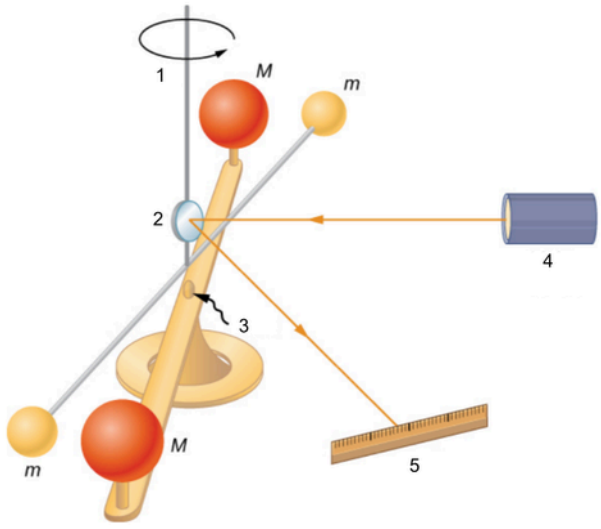


Figure 6: Cavendish used an apparatus similar to this to measure the gravitational attraction between two spheres (m) suspended from a wire and two stationary spheres (M). (Setup: 1:wire, 2:mirror, 3:pivot, 4:light source, 5:scale)

Mass and Weight

Mass is a fundamental property of a physical object, a measure of its inertia (according to Newton's second law of motion). In general, mass is a measure of the amount of matter in an object. The mass of an object is independent of the object's location (the mass of an object is the same on the Earth, the moon or in deep space). The SI unit of mass is kg. The force acting on an object due to gravitation F_G=mg is called weight, as illustrated in the upper image of Figure 7. If the gravitational acceleration and the weight are known, the mass of an object can be determined.

A weighing scale does not measure the weight of an object but rather a force with the same magnitude as the normal force which acts on the object and is supplied by the scale. This situation is depicted in the lower image of Figure 7. When the net force on the apple is zero (the apple is not accelerating) the normal force (F_N) has the same magnitude as the weight (F_G) of the apple. In other words: The scale is pushing upwards with a force equal in magnitude to the weight of the apple. This force (indicated by the red arrow in the free body diagram of the scale) is actually measured by the scale and equals the weight of the apple in case of zero net force.

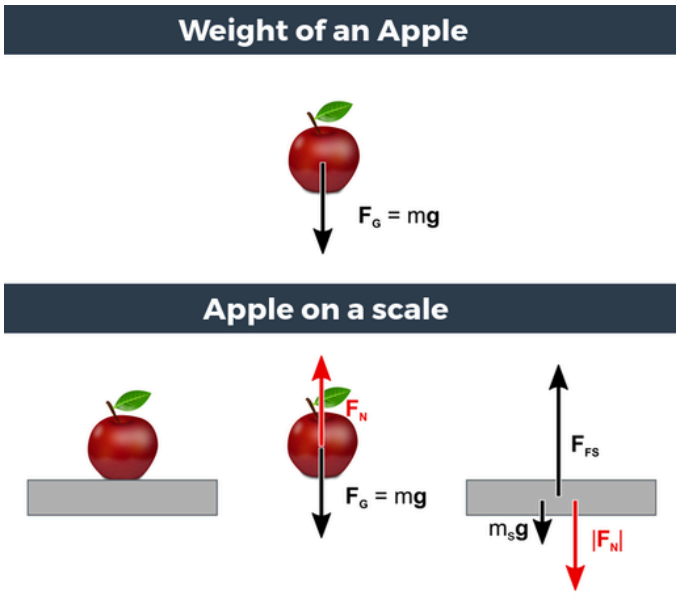


Figure 7: The weight of an apple of mass m is given by F_G=mg. Apple on a scale (indicated by the gray rectangle) and the two corresponding free body diagrams (right). F_G=mg is the weight of the apple, F_N (or N) the normal force, msg the weight of the scale, F_{FS} is the normal force the floor is exerting on the scale.

Orbiting Cannonballs

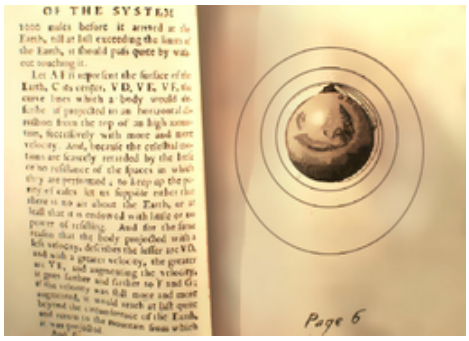


Figure 8: Imitation of Newton's famous drawing.

An orbit is the curved path taken through space by one body around another due to the gravitational force between them. This path is often regularly repeating, for example the Earth moving around the Sun. A classic way to understand orbits is to consider throwing a ball horizontally on Earth. The ball will accelerate down due to gravity, coming to rest on the ground having covered some horizontal distance. Over small distances, the Earth appears flat, but at larger scales we must account for the curvature of the planet. If we throw the ball fast enough, by the time the ball would have landed on a flat plane, the Earth's surface will have curved away, leaving the ball stuck in perpetual free-fall; this is a body in orbit. The velocity needed for a small mass to orbit the Earth near the surface is around 8 km/s.

When we look at an orbit where one body has much more mass than the other (for example the International Space Station orbiting Earth), it may appear like the larger body is unaffected and remains stationary. However, both bodies are in fact orbiting around their shared center of mass. The shape and speed of an orbit can be described using Kepler's Laws of planetary motion.

Planetary Motion (Kepler's Laws)

Kepler's laws describe the motion of planets around the sun and were published between 1609 and 1619 by Johannes Kepler.

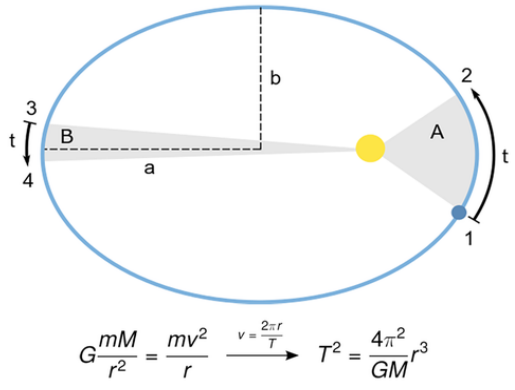


Figure 9: Illustration of the first and second law. Note, that all planets (except Mercury) have nearly circular orbits and that the given illustration is highly exaggerated.

- Kepler's first law

Every planet moves along an ellipse, with the sun located at a focus of the ellipse (To be more precise: sun and planets orbit their barycenter).

- Kepler's second law

An imaginary line joining any planet to the sun sweeps out equal areas in equal times. This law is illustrated in Figure 9: The time it takes a planet to move from position 1 to 2, sweeping out area A is exactly the time taken to move from position 3 to 4, sweeping area B, these areas are the same, A=B. As can be shown, this law is a consequence of conservation of angular momentum.

- Kepler's third law

The square of the period of any planet is proportional to the cube of the semi-major axis of the orbit, i.e. $T^2 \sim a^3$, with T denoting the period and a the semi-major axis of the orbit (see Figure 9). For the special case of a circular orbit (a=r) this can be shown by equating the gravitational force with the centripetal force and substituting the orbital velocity:

Solar System

In the following table, some basic properties of the known planets of our solar system are listed.

Name	**Distance from Sun [AU]**	**Revolution Period [y]**	**Diameter [km]**	**Mass [10^{23}kg]**	**Density [g/cm^3]**
Mercury	0.39	0.24	4878	3.3	5.4
Venus	0.72	0.62	12120	48.7	5.2
Earth	1.00	1.00	12756	59.8	5.5
Mars	1.52	1.88	6787	6.4	3.9
Jupiter	5.20	11.86	142984	18991	1.3
Saturn	9.54	29.46	120536	5686	0.7
Uranus	19.18	84.07	51118	866	1.3
Neptune	30.06	164.82	49660	1030	1.6

[AU]: Astronomical Unit is the distance from Earth to Sun.

Barycenter

For simplicity, let's consider a system of two bodies orbiting each other. Then the barycenter is the center of mass of the two bodies which is also the point around which they both orbit (see Figure 10).

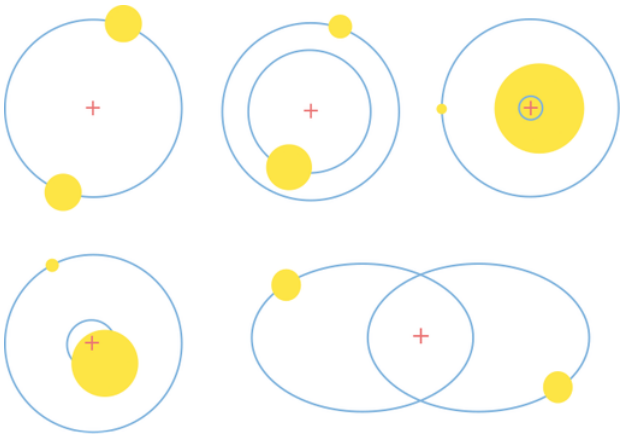


Figure 10: Different two-body systems with indicated orbits (blue) and barycenters (red).

So strictly speaking, the moon is not orbiting Earth but both orbit the barycenter which lies well beneath the Earth's surface. Similarly, the planets of the solar system and the sun orbit the barycenter of the solar system (center of mass of all objects in the solar system) which again, is close to the sun but constantly changing (since the center of mass changes due to the motion of the planets). This causes a 'wobbling'- motion of the sun. This is used for the search of extrasolar planets as the detection of a wobbling star is an indication of the gravitational influence of orbiting planets.

Bound and Unbound Trajectories

An object 'm' in the gravitational field of another object 'M' can move on a bound (orbit) or unbound trajectory. Bound and unbound trajectories can be described by conic sections, and calculated using the concept of conservation of energy.

Conic Sections

In physics, the paths that can be taken by an object under gravitational attraction are called the conic sections. In mathematics, these curves are obtained by taking a slice from a cone at different angles. These shapes are the circle, the ellipse, the parabola and the hyperbola. The circle and ellipse are **bound orbits** (like planets around the sun), and the parabola and hyperbola are **unbound** (like a deflecting rocketship on a slingshot orbit).

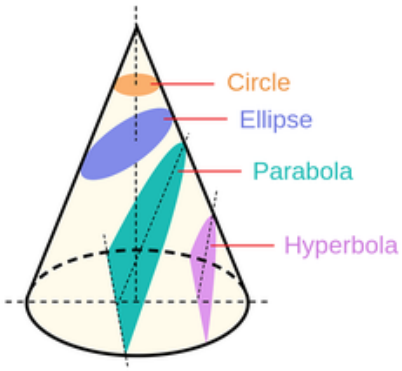


Figure 11: Illustration of the four different conic sections.

Calculating Bound and Unbound Trajectories

To determine whether an object with mass 'm' will follow a bound or unbound trajectory, it is useful to apply conservation of energy and calculate the kinetic and gravitational potential energy of the object in the gravitational field of mass 'M' .

$E_{kinetic} > E_{potential}$: Object 'm' has enough energy to escape the gravitational pull of object 'M' and follows an unbound orbit, escaping to infinity.

$E_{kinetic} < E_{potential}$: The velocity of object 'm' is too small to escape the gravitational attraction of object 'M' and is stuck in freefall around object 'M'.

The kinetic energy $E_{kinetic}$ and the gravitational potential energy $E_{potential}$ of an object with mass 'm' in the gravitational field of mass 'M' can be described by equations in the escape velocity theory page.

Escape velocity

Even though the gravitational force acts infinitely far, an object can escape the gravitational attraction. The minimum velocity needed for an object to escape from the gravitational influence of a massive body is called escape velocity. It can be calculated by applying conservation of energy and equating the total energy of the object at an initial distance R from the massive body with the energy when the object reaches 'infinity', with a velocity equal 0, presented in the second row in figure 12, from which v_{esc} can be derived, presented in the third row of the figure 12, which is independent of the object's mass 'm' and true for ballistic motion (no propulsion).

If the body moves with escape velocity but not directly away from the object, it will escape in a curved path (escape orbit) which is parabolic. Above that velocity, the path will be hyperbolic, below the object cannot escape the gravitational influence and will enter a bound orbit. As Newton derived from his law of universal gravitation, the possible trajectories can be described by conic sections.

1) $$E_{kin} = \frac{1}{2}mv^2 \quad E_{pot} = -G\frac{mM}{r}$$

2) $$\frac{1}{2}mv_{esc}^2 - G\frac{mM}{R} = \frac{1}{2}m0 - G\frac{mM}{\infty}$$

3) $$v_{esc} = \sqrt{\frac{2GM}{R}}$$

Figure 12: Equations for derivations of escape velocity.

Limitations of Newton's Gravitation

Newton's law of universal gravitation accurately predicts much of what we see within our solar system. Nevertheless, many phenomena have shown a discrepancy from what Newton's laws predict, including the orbit of Mercury and the effect that gravity has on light.

The 'speed' of gravitation

Also, Newton inherently assumed that gravitation is an *action-at-a-distance* force. That is, without physical contact, any change in the position of one mass is instantly communicated to all other masses. This assumption does not come from any first principle, as Newton's theory simply does not address the question. With Einstein's theory of special relativity

the *action-at-a-distance* assumption was dismissed (the speed limit in the universe is the speed of light) and in 1915 he published his theory of general relativity.

General Relativity

General Relativity is a theory of space-time geometry and how mass (and acceleration) distort and interact with that space-time (see Figure 13).

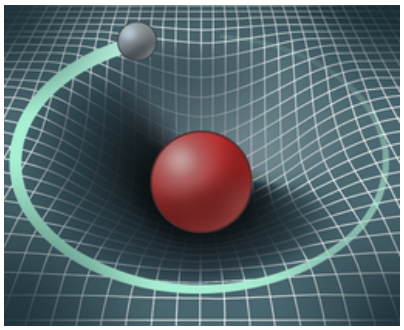


Figure 13: A smaller mass orbiting in the distorted space-time of a larger mass. In fact, all mass or energy distorts space-time.

It is not a theory of gravitational forces. For weak gravitational fields, the results of general relativity do not differ significantly from Newton's law of gravitation. But for intense gravitational fields, the results diverge, and general relativity has been shown to predict the correct results. Even in our Sun's relatively weak gravitational field at the distance of Mercury's orbit, we can observe the effect. Starting in the mid-1800s, Mercury's elliptical orbit has been carefully measured. However, although it is elliptical, its motion is complicated. But general relativity correctly predicts the measurements. Since then, many measurements, such as the deflection of light of distant objects by the Sun, have verified that general relativity correctly predicts the observations.