

BIOL 0016E - ECOLOGY OF THE SIERRAN CONIFER FOREST

Catalog Description

Hours: 13 (7 lecture, 6 laboratory)

Description: Field study that introduces forest biology/ecology, emphasizing interrelationships between the Sierran forest inhabitants (animals, plants, fungi) and their environment. Study sites include a variety of forest and other associated mountain ecological communities. Depending on season offered, special topics may include: fungi biology, wildflower ecology, tree anatomy and physiology, forest nutrient cycles, forest birds, and soil organisms. This class may require ability to hike moderate distances on uneven ground. (CSU)

Course Student Learning Outcomes

- CSLO #1: Describe and evaluate the impacts of humans on the environments of Sierran conifer forest.
- CSLO #2: Describe the ecological and geological principles that affect the natural ecosystems of the Sierran conifer forest.
- CSLO #3: Explain the factors that have shaped the evolutionary adaptations of the organisms of the Sierran conifer forest.
- CSLO #4: Accurately document and interpret ecological observations made on a field trip in the Sierran conifer forest.

Effective Term

Fall 2022

Course Type

Credit - Degree-applicable

Contact Hours

13

Outside of Class Hours

14

Total Student Learning Hours

27

Course Objectives

Course objectives are linked to items listed in the course content outline (parentheses)

Lecture Objectives:

1. Evaluate the factors that have affected the formation of the ecosystems of the Sierran conifer forest. (Lecture Outline #1, #2, #3)
2. Apply ecological terminology to the description of the ecosystems of the Sierran conifer forest. (Lecture Outline #1, #2, #3, #4)
3. Describe the interactions that local organisms have with the biotic and abiotic factors of their ecosystems. (Lecture Outline #3, #4, #5, #6)
4. Explain the role that geology plays in the formation and delineation of Sierran conifer forest ecosystems. (Lecture Outline #2, #3)

5. Analyze the past and present effects that humans have on Sierran conifer forest ecosystems. (Lecture Outline #6)

Laboratory/Field Objectives:

1. Demonstrate the use of a taxonomic key or field guide to identify species. (Laboratory/Field Outline #1)
2. Identify geological features that impact the formation and function of Sierran conifer forest ecosystems. (Laboratory/Field Outline #2)
3. Identify and observe the interactions that local organisms have with the biotic and abiotic factors of their ecosystems. (Laboratory/Field Outline #1, #2, #3, #4)
4. Identify examples of human impacts to Sierran conifer forest ecosystems. (Laboratory/Field Outline #4)
5. Create a detailed field journal or summary report documenting the field experience. (Laboratory/Field Outline #5)

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Projects
 - Example: To address Course Lecture Objective #3, "Investigate the interactions that local organisms have with the biotic and abiotic factors of their ecosystems", students might be asked, either individually or in groups, to prepare a short oral presentation or written report or participate in a class discussion about the major characteristics of a species of plant or animal occurring in the Sierran conifer forest and its role in the ecosystem. Students could be evaluated on participation, accuracy of information, attention to details, and completeness.
- Reports
 - Example: To address Course Lab Objective #5, "Create a detailed field journal or summary report documenting the field experience", students might be asked to write a report summarizing the ecosystem(s) visited, geological features observed, and species encountered. Students could be evaluated based on accuracy of information, attention to detail, and completeness of summary.
- Skill Demonstrations
 - Example: To address Course Lab Objective #1, "Demonstrate the use of a taxonomic key or field guide to identify species", students might be asked to use a taxonomic key to correctly identify an organism. Students could be evaluated on the correctness of answer, technique, and application of terminology in the key.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion

Lab:

1. To address Course Lab Objective #1, "Demonstrate the use of a taxonomic key or field guide to identify species", the instructor might lead the class in a demonstration of the use of a dichotomous key for a known specimen, and then guide students as they attempt the identification of unknown specimens.
2. To address Course Lab Objective #2, "Identify geological features that impact the formation and function of Sierran conifer forest ecosystems", the instructor might point out such key features in the field, making comparisons to other such geological features observed in the field or described in the classroom, and then students will make and record their own observations and comparisons.

Lecture:

1. To satisfy Course Lecture Objective #4, "Explain the role that geology plays in the formation and delineation of Sierran conifer forest ecosystems", the instructor might present a lecture (supplemented by images and/or video) that explains the geological history of the Sierra Nevada, including what rock formations make up the range and how those have influenced the development of soils and species assemblages, and then students will make and record their own observations of geological features.
2. To satisfy Course Lecture Objective #5, "Analyze the past and present effects that humans have on Sierran conifer forest ecosystems", the instructor might lead an in-class discussion about the historical impacts of humans on Sierran conifer forest ecosystems (e.g. burning, fire suppression, mining, logging, recreation, etc.).

- OER Link:
- OER:
- Pacific Coast Tree Finder
 - Author: Watts, Tom
 - Publisher: Nature Study Guild Publishers
 - Publication Date: 2004
 - Text Edition: 3rd
 - Classic Textbook?:
- OER Link:
- OER:
- The Laws Guide to Nature Drawing and Journaling
 - Author: Laws, John Muir
 - Publisher: Heyday Books
 - Publication Date: 2016
 - Text Edition: 1st
 - Classic Textbook?:
- OER Link:
- OER:

Other materials and-or supplies required of students that contribute to the cost of the course.

Typical Out of Class Assignments

Reading Assignments

1. To address Course Lecture Objective #2, students might be asked to read a handout that describes basic ecological terminology related to Sierra Nevada and then apply this knowledge to descriptions of observations made in the field.
2. To address Course Lecture Objective #3 and Course Lab Objective #3, students might be asked to review life history information for a Sierran conifer forest species that is available in a field guide, handout, or on a natural resource agency website and be prepared to discuss this in class.

Writing, Problem Solving or Performance

1. To address Course Lecture Objective #4 and Course Lab Objective #2, students might be asked to write and/or prepare a short oral presentation about a geological feature occurring in a Sierran conifer forest ecosystem.
2. To address Course Lab Objective #5, students might be asked to document their observations in the field in a journal, using any combination of text, sketches, photos, and/or other media.

Other (Term projects, research papers, portfolios, etc.)

Required Materials

- Field Guide to the Sierra Nevada
 - Author: Laws, John Muir
 - Publisher: California Academy of Sciences
 - Publication Date: 2007
 - Text Edition: 1st
 - Classic Textbook?: