

# ESCI 0056D - FIELD GEOLOGY IN THE SIERRA NEVADA

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## Catalog Description

Hours: 36 lecture

Description: Exploration of the natural history of the Sierra Nevada. May include national parks (eg. Yosemite, Sequoia, Kings Canyon, Mono Lake). Some hiking required. Camping and/or park entrance fees may be required. A 2 hour and 50 minute classroom pre-session is required. (CSU)

## Course Student Learning Outcomes

- CSLO #1: Describe the convergent Andean Plate boundary that created the ancient Sierra during the Mesozoic Era.
- CSLO #2: Explain the Pleistocene glacial episodes that sculpted the Sierra Nevada and produced the present grandeur of the high Sierra.

## Effective Term

Fall 2018

## Course Type

Credit - Degree-applicable

## Contact Hours

36

## Outside of Class Hours

72

## Total Student Learning Hours

108

## Course Objectives

1. Relate rock types to the different formations of the Sierra Nevada.
2. Compare and contrast tectonic features of the Sierra Nevada.
3. Interpret the geologic history of of the Sierra Nevada.
4. Analyze the geomorphic processes that sculpted the area, emphasizing the Sierra Nevada mountains, river valleys, glaciated morphology, fault features, and volcanoes.
5. Relate the physical and biological environments of the Sierra Nevada.

## 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

- Reports
  - Example: Students will create a report (4-6 pages) on a topic related to the geology or paleontology of the area of the field course.
- Other
  - Example: The student will create accurate and thorough field notes of the entire field experience to be turned in approximately 2 weeks after the trip.

## Repeatable

No

## Methods of Instruction

- Lecture/Discussion

Lecture:

1. The instructor will lecture on the geomorphic features, geomorphology, volcanic history and earthquake activity of the Sierra Nevada.
2. The instructor will lecture on the subduction zone tectonics of the Andean Type Plate Boundaries of the Mesozoic Sierra and present day tectonic of the province.

## Typical Out of Class Assignments Reading Assignments

1. Read handouts on basic geological settings, the geologic time scale, rock types and be prepared for discussion.
2. Read handouts on the Sierra Nevada and Andean Type Plate boundaries and be prepared for discussion.

## Writing, Problem Solving or Performance

1. Using oral and written guidelines, create accurate field notes.
2. Complete a 4-6 page research paper based on a topic identified by the student and approved by the instructor, such as a paper on the plate tectonics of the Sierra Nevada or volcanic history of the Long Valley Caldera.

## Other (Term projects, research papers, portfolios, etc.) Required Materials

- Geology of the Sierra Nevada
  - Author: Mary Hill
  - Publisher: UC Press
  - Publication Date: 2006
  - Text Edition:
  - Classic Textbook?:
  - OER Link:
  - OER:
- Roadside Geology of the Northern and Central California
  - Author: Alt and Hyndman
  - Publisher: Mountain Press
  - Publication Date: 2016
  - Text Edition:

- Classic Textbook?:
- OER Link:
- OER:
- Up and Down California in 1860-1864
  - Author: William Brewer
  - Publisher: UC Press
  - Publication Date: 1996
  - Text Edition:
  - Classic Textbook?:
  - OER Link:
  - OER:
- Geology of California
  - Author: Deborah Harden
  - Publisher: Prentice Hall
  - Publication Date: 1998
  - Text Edition:
  - Classic Textbook?:
  - OER Link:
  - OER:

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