

ESCI 0056B - FIELD GEOLOGY OF WESTERN NORTH AMERICA - GEOLOGY OF UTAH

Catalog Description

Hours: 54 (27 lecture, 27 laboratory)

Description: Field course covering the National Parks of northern Arizona, and Utah including, but not limited to: Zion, Bryce, Canyonlands, Grand Canyon, Monument Valley, Arches, and Capitol Reef. Entrance and transportation fees may be required. (CSU)

Course Student Learning Outcomes

- CSLO #1: Compare and contrast geologic features of specific field localities.
- CSLO #2: Analyze and evaluate geologic processes responsible for producing specific landforms of the area covered.
- CSLO #3: Interpret the tectonic setting of area covered.

Effective Term

Fall 2018

Course Type

Credit - Degree-applicable

Contact Hours

54

Outside of Class Hours

54

Total Student Learning Hours

108

Course Objectives

Through hands-on field experiences, discussion and assignments student will be able to:

Lecture:

1. Identify and describe rock lithologies and formations in the various parks visited in Utah.
2. Identify, describe, compare and contrast geologic features of the various parks visited in Utah.
3. Describe and evaluate the geologic history of the various parks visited in Utah.
4. Analyze and evaluate geologic processes and deduce valid conclusions as to the tectonic and erosional activity of the various parks visited in Utah.

Laboratory:

1. Demonstrate critical thinking through synthesis of geologic information to form conclusions, solve problems, and understand earth processes.
2. Create accurate written field notes.

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 write a research paper on a student-identified topic based on the trip. One example would be, the evolution of Pleistocene Lake Bonneville to present day Great Salt Lake. The research paper is graded both on content and writing ability and based on a rubric agreed upon by the faculty teaching the field courses.
- Other
 - Example: Students will create field notes including a clear description of the experience. Strong notes will be carefully written and present information in a road-log that includes mileage, turns, geology, photographs and/or drawings. This is graded based on a rubric agreed upon by the faculty teaching the field courses.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion

Lab:

1. Instructor will demonstrate relationships between geologic structures and the evolution of the landscape. At Zion National Park we will explore the Navajo Sandstone and its features, mainly cross bedding. We will use this to determine paleoenvironment and paleocurrent direction. We will also attempt to correlate the Navajo sandstone with the Aztec and Nugget sandstone formations.

Lecture:

1. Instructor will stop at a site that illustrates a particular geologic structure and through discussion and perhaps diagram explain the geological process that created it. We take students into the field to see the actual geologic phenomena that they are learning about. The geology of Utah is exposed in a spectacular manner. We can teach the geologic history of Western North America from the Proterozoic to recent deposits by visiting the various State and National Parks. The stratigraphy is clearly exposed and we use these rock layers to understand the paleoclimatic conditions present over the past billion years.

Typical Out of Class Assignments Reading Assignments

1. Read instructor-provided handouts pertaining to selected parks of Utah and adjacent areas such as "Stratigraphic sequence of the Grand

Staircase" and be prepared for discussion. 2. Read appropriate geological books and/or periodicals to prepare for research paper.

Writing, Problem Solving or Performance

1. Using oral and written guidelines, create accurate field notes. 2. Complete a 2-4 page research paper based upon a topic identified by the student and approved by the instructor, such as Pleistocene Lake Bonneville or formation of the hoodoos at Goblin Valley State.

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

Required Materials

- Roadside Geology of Utah (Roadside Geology Series)
 - Author: Felicie Williams, Lucy Chronic, and Halka Chronic
 - Publisher: Mountain Press Publishing Company
 - Publication Date: 2014
 - Text Edition:
 - Classic Textbook?:
 - OER Link:
 - OER:
- Geology of Utah (Occasional paper no. 6 of the Utah Museum of Natural History)
 - Author: William Lee Stokes
 - Publisher: Utah Museum of Natural History
 - Publication Date: 1989
 - Text Edition:
 - Classic Textbook?:
 - OER Link:
 - OER:
- Geological Evolution of the Colorado Plateau of Eastern Utah and Western Colorado
 - Author: Robert Fillmore
 - Publisher: University of Utah Press
 - Publication Date: 2011
 - Text Edition: 1st
 - Classic Textbook?:
 - OER Link:
 - OER:

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

Map of selected parks of Utah and adjacent areas
Field instruction book covering selected parks of Utah and adjacent areas prepared by instructor for each trip
Supplemental library covering selected parks of Utah and adjacent areas
Handouts
Supplemental reading related to selected parks of Utah and adjacent areas