

# ESCI 0003 - HISTORICAL GEOLOGY

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## Catalog Description

Formerly known as GEOL 3

Corequisite: Concurrent enrollment in ESCI 3L

Advisory: Completion of ESCI 1 and 1L with grades of "C" or better

Hours: 54 lecture

Description: An introduction to Earth's history and the life it supports. Includes geologic dating, plate tectonics, stratigraphy, fossils, biological evolution, the planet's origin, and the processes that have influenced paleogeography during the past 4.6 billion years. Designed for Geology majors. (C-ID GEOL 110) (CSU, UC)

## Course Student Learning Outcomes

- CSLO #1: Analyze and evaluate the tectonic history of the earth.
- CSLO #2: Describe the broad aspects of evolution of life through time.
- CSLO #3: Describe the influence of geologic events on the history of the biosphere.

## Effective Term

Fall 2018

## Course Type

Credit - Degree-applicable

## Contact Hours

54

## Outside of Class Hours

108

## Total Student Learning Hours

162

## Course Objectives

1. Explain the scientific method.
2. Analyze geologic events within the framework of Plate Tectonics.
3. Describe the Supercontinent Cycle.
4. Analyze and evaluate the tectonic history of the crust of the earth.
5. Apply methods of relative and absolute dating in establishing geologic history.
6. Apply the principles of evolution in understanding the paleontological history of life on earth.
7. Compare and contrast the fossil record with the methods of Darwinian evolution.
8. Explain formation of fossils, minerals, and rocks, including their basic properties and characteristics.
9. Evaluate the history of life and tectonic changes of Earth through time including the Archean, Proterozoic, and Phanerozoic.

## General Education Information

- Approved College Associate Degree GE Applicability
  - AA/AS - Physical Sciences
- CSU GE Applicability (Recommended-requires CSU approval)
  - CSUGE - B1 Physical Science
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)
  - IGETC - 5A Physical Science

## Articulation Information

- CSU Transferable
- UC Transferable

## Methods of Evaluation

- Objective Examinations
  - Example: Compare and contrast the sedimentary rock sequence created in meandering river and submarine fan depositional environments. Performance evaluated based on accuracy and completeness.
- Problem Solving Examinations
  - Example: Determine the sequence of events (rock unit formation, structures, unconformities) in a given geologic cross section. Performance evaluated based on accuracy of order of events and identification of event type (type of fold, type of fault, type of unconformity).

## Repeatable

No

## Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. Instructor will present PowerPoint lecture/discussion on the late Paleozoic history of animals and plants. Students will discuss how these forms of life compare to those already seen in the early Paleozoic time.
2. Instructor will provide a description of the principles of evolution in understanding the paleontological history of life on earth. Instructor will divide students into small groups where they will use reading and lecture information to apply these principles by creating a timeline. As needed, the instructor will work with small groups to clarify questions and review information.

Distance Learning

1. Instructor will provide recorded video lectures on extinction events and students will discuss the probable causes of each event and how the environmental conditions changed causing the extinction event.
2. Instructor will provide recorded video lectures on the tectonic history of the North American continent and the students will create a timeline showing these events.

## **Typical Out of Class Assignments**

### **Reading Assignments**

1. Read textbook chapter on the evolution of late Proterozoic life and be prepared to discuss in class. 2. Read an appropriate article pertaining to Historical Geology in a scientific journal and write a review of the article.

### **Writing, Problem Solving or Performance**

1. Write a Periodical Review on the contribution of a specific fossil or fossil group to the understanding of the geologic time period during which it lived. 2. Determine the geologic history of a given area based on relative dating principles.

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

### **Required Materials**

- Historical Geology
  - Author: Reed Wicander & James S. Monroe
  - Publisher: Cengage Learning
  - Publication Date: 2017
  - Text Edition: 9th
  - Classic Textbook?:
  - OER Link:
  - OER:

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