



**El Camino College**  
**COURSE OUTLINE OF RECORD – Approved**

**I. GENERAL COURSE INFORMATION**

**Subject and Number:** Geology 30  
**Descriptive Title:** Geology Laboratory of Death Valley  
**Course Disciplines:** Earth Science  
**Division:** Natural Sciences

**Catalog Description:**

This course is a field and laboratory study of the geologic history, rock types, and structural and geomorphic features of the Death Valley region, with special emphasis on seismic activity and desert processes.

*Note: Credit may be earned in Geology 30, Geology 32, Geology 34, and Geology 36; however, only one course (one unit) will be transferable.*

*Note: Some labs will be held in the field on weekends at arranged times.*

**Conditions of Enrollment:**

**Prerequisite:** Geology 1 with a minimum grade of C or concurrent enrollment

**Course Length:** Full Term X Other (Specify number of weeks): 6 weeks

**Hours Lecture:** 0 hours per week TBA  
**Hours Laboratory:** 3.00 hours per week X TBA

**Course Units:** 1.00

**Grading Method:** Letter  
**Credit Status:** Associate Degree Credit

**Transfer CSU:** X Effective Date: Prior to July 1992  
**Transfer UC:** X Effective Date: Prior to July 1992

**General Education:**

**El Camino College:**

**1 – Natural Sciences**

Term: Other:

**CSU GE:**

**B1 - Physical Science**

Term: Other:

**B3 - Laboratory Sciences**

Term: Fall 2002 Other:

**IGETC:**

**5A - Physical Science, Lab only**

Term: Other:

## II. OUTCOMES AND OBJECTIVES

### A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)

1. As a part of the series of geology courses, we want students to understand how their environment in general and the Earth in particular affects their lives, and how their actions and their society's actions can affect the natural systems that sustain us all. SLO Statement: "Students recognize and can accurately articulate how the Earth affects humans' lives and how human activities affect the Earth. (Recognize → valuing: learning outcome related to attitudes, behaviors, and values; articulate (explain) → comprehension: learning outcome related to knowledge)

The above SLOs were the most recent available SLOs at the time of course review. For the most current SLO statements, visit the El Camino College SLO webpage at <http://www.elcamino.edu/academics/slo/>.

### B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below, along with a representative assessment method for each)

1. Analyze geologic cross sections and maps of the Death Valley region in order to demonstrate understanding of the geologic history of eastern California.
  - Laboratory reports
2. Identify common rock-forming minerals, sedimentary rocks, igneous rocks, and metamorphic rocks in the laboratory class and in the field.
  - Objective Exams
3. Compare and contrast different types of faulting, including normal, reverse, and strike slip faults.
  - Laboratory reports
4. Use the principles of relative age dating to determine the geologic age relationships of various rocks.
  - Field work
5. Compare and contrast different mining techniques, including underground shaft, open pit/leach field, and underground brine mining.
  - Presentation
6. Use contour maps and photographs to identify and list several surface features created by desert processes, including alluvial fans, playas, inselbergs, and dunes.
  - Journal (kept regularly throughout the course)
7. Identify seismic features such as scarps, sag ponds, horsts, grabens, and wine-glass canyons on contour maps, photographs, and in the field.
  - Laboratory reports

**III. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)**

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lab	3	I	Introduction A. Minerals 1. Physical properties 2. Identification B. Geologic Time 1. Geologic cross sections 2. Geologic columns
Lab	2	II	Igneous Rocks (to be investigated in Death Valley area) A. Composition & texture B. Formation C. Identification
Lab	2	III	Volcanism (to be studied in Death Valley) A. Types of volcanoes B. Erupted materials and styles C. Field relations
Lab	2	IV	Sediments & Sedimentary rocks A. Composition & texture B. Formation C. Identification
Lab	3	V	Contour Maps A. Identify features B. Construct maps
Lab	3	VI	Black Mountain A. Metamorphic Rocks 1. Composition & texture B. Seismic Geology 1. Types of faulting 2. Identification of fault
Lab	3	VII	Desert Features (to be studied in Mojave Desert and Death valley) A. Eolian processes (dunes, ventifacts, deflation) B. Water erosion (canyons, inselbergs) C. Deposits (alluvial fans, playa bajada)
Lab	2	VIII	Visual examination identifying features of the land.
Lab	34	IX	Death Valley Field Trip Most of the class hours will be conducted in the Death Valley areaduring a 4-day weekend in the field I. Rock types observed i. Igneous a. Basalt b. Rhyolite c. Tuff d. Granite

			<ul style="list-style-type: none"> <li>ii. Sedimentary <ul style="list-style-type: none"> <li>a. Sandstone</li> <li>b. Shale</li> <li>c. Limestone</li> </ul> </li> <li>iii. Metamorphic <ul style="list-style-type: none"> <li>a. Gneiss</li> <li>b. Schist marble</li> <li>c. Breccia</li> </ul> </li> </ul> <p>II. Volcanic features</p> <ul style="list-style-type: none"> <li>i. Cinder craters</li> <li>ii. Phreatic crater</li> <li>iii. Tuff</li> <li>iv. Basalt flows</li> <li>v. Dikes (columnar jointing volcanic necks)</li> </ul> <p>III. Sedimentary features</p> <ul style="list-style-type: none"> <li>i. Layering</li> <li>ii. Bedding</li> <li>iii. Graded bedding</li> <li>iv. Cross-bedding</li> </ul> <p>IV. Geomorphic features and processes</p> <ul style="list-style-type: none"> <li>i. Ancient shorelines of pluvial lakes</li> <li>ii. Rivers and streams</li> <li>iii. Weathering and erosion features (canyons, natural bridge)</li> </ul> <p>V. Geologic history. The geologic history of the Death Valley region is studied and deduced.</p> <ul style="list-style-type: none"> <li>i. Relative age dating methods</li> <li>ii. Field relationships</li> </ul> <p>VI. Structures</p> <ul style="list-style-type: none"> <li>i. Tilted fault blocks</li> <li>ii. Normal faults</li> <li>iii. Horst and graben</li> <li>iv. Evidence for faulting escarpments</li> <li>v. Offset features</li> </ul> <p>VII. Desert features</p> <ul style="list-style-type: none"> <li>i. Playa</li> <li>ii. Alluvial fan</li> <li>iii. Desert pavement</li> <li>iv. Dunes</li> <li>v. Ventifacts</li> <li>vi. Deflation</li> </ul> <p>VIII. Gold mining locations</p> <ul style="list-style-type: none"> <li>i. Comparing old underground mining techniques</li> <li>ii. Modern open pit method</li> </ul>
Total Lecture Hours		0	
Total Laboratory Hours		54	
Total Hours		54	

#### **IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS**

##### **A. PRIMARY METHOD OF EVALUATION:**

Problem solving demonstrations (computational or non-computational)

##### **B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:**

Examine the rock samples from Death Valley and provide the following information on your lab report.

a. Identify the metamorphic rock. b. Indicate whether it is foliated or non-foliated. c. Write the name of the sedimentary rock from which it is derived. d. Name any visible minerals

##### **C. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:**

1. Construct a detailed cross-section of the Death Valley region. Interpret the geologic history of the rocks that are present in each of these areas. Construct a geologic sequence showing all rock units and unconformities, including Precambrian metamorphics, Paleozoic sedimentary rocks, Mesozoic granites, Tertiary volcanics, and Quaternary alluvial fans and playas

2. Draw a contour map of a typical desert basin, showing features such as mountains, playas, and alluvial fans. What type of sediment would you find in each location?

##### **D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:**

Objective Exams

Laboratory reports

Field work

Multiple Choice

Completion

Matching Items

Other (specify):

Short essay questions

Identify rocks in the laboratory

#### **V. INSTRUCTIONAL METHODS**

Demonstration

Field trips

Laboratory

**Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.**

#### **VI. WORK OUTSIDE OF CLASS**

Observation of or participation in an activity related to course content

Other (specify)

Field trip is required in this class.

**Estimated Independent Study Hours per Week:**

**VII. TEXTS AND MATERIALS**

**A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS**

1. Di Fiori. GEOLOGY 30 STUDENT PACKET, Printery, 2019  
ISBN: 9781453400760
2. "Rite in the Rain", Geologic Field Notebook

**B. ALTERNATIVE TEXTBOOKS**

**C. REQUIRED SUPPLEMENTARY READINGS**

**D. OTHER REQUIRED MATERIALS**

**VIII. CONDITIONS OF ENROLLMENT**

**A. Requisites (Course and Non-Course Prerequisites and Corequisites)**

Requisites	Category and Justification
Course Prerequisite Geology-1	Standard Requisite

**B. Requisite Skills**

Requisite Skills
Knowledge of how various rocks are formed by igneous, sedimentary, and metamorphic processes, with emphasis on the rocks that exist in eastern California. GEOL 1 - Relate the characteristics and nature of the common rock-forming minerals and rocks to the processes that formed them.
Understanding of the processes and importance of plate tectonics and seismicity GEOL 1 - Correlate the formation of earthquake waves with faults and plate tectonic forces.
Knowledge of the processes of mountain building, with emphasis on the different types of faulting. GEOL 1 - Relate the theory of plate tectonics to volcanism, earthquakes, mountain building, and other geologic processes.
Understanding of erosion by rivers and desert processes. GEOL 1 - Describe the processes of weathering and erosion of rocks, including methods by which streams, groundwater, glaciers, wind, and ocean waves shape the surface.

**C. Recommended Preparations (Course and Non-Course)**

Recommended Preparation	Category and Justification

**D. Recommended Skills**

Recommended Skills
Ability to describe and record geologic processes in a laboratory activity or field report based upon class readings and field observations. ENGL 84 - Utilize comprehension and vocabulary strategies to improve reading rate. ENGL 84 - Select and employ reading strategies to interpret the content of a college-level textbook, with special focus on constructing a thesis statement and providing valid support.

**E. Enrollment Limitations**

<b>Enrollment Limitations and Category</b>	<b>Enrollment Limitations Impact</b>
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**Course created by W. Hirt & E.J. Baldwin on 11/01/1977.**

**BOARD APPROVAL DATE:**

**LAST BOARD APPROVAL DATE: 01/21/2020**

**Last Reviewed and/or Revised by: Sara Di Fiori  
18076**

**Date: 10/31/2019**