



**I. GENERAL COURSE INFORMATION**

**Subject and Number:** Geology 36  
**Descriptive Title:** Geology Laboratory of Coastal California  
**Course Disciplines:** Earth Science  
**Division:** Natural Sciences

**Catalog Description:**

This course is a field and laboratory study of the geologic history, rock types, structural and geomorphic features and mountain building processes along the central and southern California coast with special emphasis on the geologic history of the Salinian Block, the subsequent impact of the San Andreas Fault, and coastal erosional 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.*

*Note: UC does not accept Geology 30, 32, 34, or 36 for the Physical Science laboratory requirement.*

**Conditions of Enrollment:**

**Prerequisite:** Geology 1 with a minimum grade of C or Concurrent Enrollment

**Recommended Preparation:** English 84

<b>Course Length:</b>	<b>Full Term</b>	<b>Other (Specify number of weeks):</b>
<b>Hours Lecture:</b>	<b>0 hours per week</b>	<b>TBA</b>
<b>Hours Laboratory:</b>	<b>3.00 hours per week</b>	<b>TBA</b>
<b>Course Units:</b>	<b>1.00</b>	

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

**Transfer CSU:** X Effective Date: 3/18/2002  
**Transfer UC:** X Effective Date: Fall 2002

**General Education:**

**El Camino College:**

**1 – Natural Sciences**

Term: Other:

**CSU GE:**

**B1 - Physical Science**

Term: Other:

**B3 - Laboratory Sciences**

Term: Fall 2003 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)

SLO #1 Basic Knowledge - Students can identify the salient features of the basic concepts of geology. (This includes the ability to recall the definitions of the specialized vocabulary of geology.)

SLO #2 Relationship with Their Environment - Students recognize and can accurately articulate how the Earth affects humans' lives and how human activities affect the Earth

SLO #3 Nature of Science - Students can identify the key elements of the scientific method (hypotheses, tests, observations, conclusions/interpretation of observations) in popular accounts of scientific research in magazines, newspapers, etc.

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. Identify the igneous, metamorphic, and sedimentary rocks, and their constituent minerals, that occur in the rocks of coastal California.

**Essay exams**

2. Compare and contrast the different fault mechanisms that have affected coastal California.

**Laboratory reports**

3. Use the principles of relative age dating to determine the geologic history of faulting along coastal California from Los Angeles to Monterey Bay.

**Essay exams**

4. Analyze the geologic history of the Salinian Block.

**Field work**

5. Identify landforms and features that are common along the coast and distinguish between depositional versus erosional features.

**Laboratory reports**

6. Analyze how the geologic history of the San Andreas fault has affected the rocks of coastal California.

**Field work**

7. Construct contour maps of surface features formed by faults along coastal California.

**Essay exams**

**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.)**

<b>Lecture or Lab</b>	<b>Approximate Hours</b>	<b>Topic Number</b>	<b>Major Topic</b>
Lab	3	I	Rock-Forming Minerals along the California Coast A. Physical properties B. Identification
Lab	3	II	Igneous Rocks (Transverse Ranges and Coast Ranges) A. Composition and texture B. Formation C. Identification
Lab	3	III	Sedimentary rocks (in the Transverse Ranges and Coast Ranges) A. Composition and texture B. Formation C. Identification
Lab	3	IV	Metamorphic rocks (Coast Ranges north of Santa Barbara) A. Composition and texture B. Subduction and blueschist
Lab	3	V	Wave Erosion by the Pacific Ocean A. Coastline features in bedrock B. Coastline features in beaches and shorelines
Lab	3	VI	San Andreas fault and faults in the Transverse Ranges and the Coast Ranges A. Nature and origin B. Fault geomorphology
Lab	3	VII	Mountain Building by Faults (Transverse Ranges and Coast ranges) A. Evidence of faults B. Types of mountains C. Wrench tectonics in the Transverse Ranges D. Thrust faults in the Coast Ranges
Lab	33	VIII	Field Trips Most of the instructional lab time will be in the field during a 4-day weekend. The geologic features of the Coastal California, including the Transverse Ranges and Coast Ranges, will be examined at approximately thirty locations. A. Igneous rocks (Transverse Ranges and Coastal Ranges) B. Sedimentary rocks (Coast Ranges in the Santa Barbara Area) C. Metamorphic rocks (Coast Ranges north of Santa Barbara) D. Volcanic features (Morro Bay) E. Sedimentary features of sands (Morro Bay) F. Geomorphic features and how they are formed by faults (Transverse Ranges and the Coast Ranges) G. Coastal processes such as landform modification and erosion (Santa Monica Bay to Monterey Bay) H. Geologic history of the Salinian Block and cross-cutting faults using relative age dating techniques

		I. Evidence for thrust faults (Coast Ranges)
<b>Total Lecture Hours</b>	0	
<b>Total Laboratory Hours</b>	54	
<b>Total Hours</b>	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 each of the rock samples from coastal California and answer the following on your lab report.

- a. Is it sedimentary, igneous, or metamorphic?
- b. What is the name of the rock?
- c. What texture does it have?
- d. How did it form?

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

1. In a page in your lab report, discuss the geologic history of the Salinian Block within the context of the assembly of coastal California and the outward expansion of the western North American continental margin. Interpret the geologic history of the rocks that are present in the Salinian Block for each period of the geologic time scale.
2. In a one-page essay on your exam, analyze the sedimentary depositional environment for the Tertiary rocks in the Santa Monica Mountains by applying the principle of Uniformitarianism to your observations.

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

Laboratory reports

Field work

Multiple Choice

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

**Estimated Independent Study Hours per Week: 0**

**VII. TEXTS AND MATERIALS**

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

Herzig, et al. Geology Lab Manual. El Camino College, 2017.

**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 igneous, sedimentary, and metamorphic processes are influenced by plate tectonics. GEOL 1 - Relate the characteristics and nature of the common rock-forming minerals and rocks to the processes that formed them. GEOL 1 - Relate the theory of plate tectonics to volcanism, earthquakes, mountain building, and other geologic processes.
Understanding of the processes and importance of plate tectonics and fault motion. GEOL 1 - Correlate the formation of earthquake waves with faults and plate tectonic forces. GEOL 1 - Relate the theory of plate tectonics to volcanism, earthquakes, mountain building, and other geologic processes.
Knowledge of shoreline 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.
Understand process of erosion by waves. 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
Course Recommended Preparation English-84	

**D. Recommended Skills**

Recommended Skills
Read lab manual in order to identify sedimentary rocks using a flow chart ENGL 84 - Utilize comprehension and vocabulary strategies to improve reading rate.

**E. Enrollment Limitations**

Enrollment Limitations and Category	Enrollment Limitations Impact
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**Course created by Charles T. Herzig on 02/01/2002.**

**BOARD APPROVAL DATE: 03/18/2002**

**LAST BOARD APPROVAL DATE: 12/17/2018**

**Last Reviewed and/or Revised by: Joseph Holliday**

**Date: 9/21/2018**

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