



El Camino College
 COURSE OUTLINE OF RECORD – Official

Course Acronym:	GEOL
Course Number:	34
Descriptive Title:	Geology Laboratory of Southeastern California
Division:	Natural Sciences
Department:	Geology
Course Disciplines:	Earth Science
Catalog Description:	This course is a field and laboratory study of the fault history, rock types, and structural and landform features of the deserts of Southeastern California with a focus on volcanic processes and desert landforms in the Mojave Desert and Anza-Borrego regions.
Prerequisite:	Geology 1 with a minimum grade of C or concurrent enrollment
Co-requisite:	
Recommended Preparation:	Eligibility for English 1A
Enrollment Limitation:	
Hours Lecture (per week):	0
Hours Laboratory (per week):	3
Outside Study Hours:	0
Total Course Hours:	54
Course Units:	1
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	3/18/2002
Transfer UC:	Yes
Effective Date:	fall 2002
General Education: ECC	Area 1 - Natural Sciences
Term:	
Other:	
CSU GE:	Area B1 - Physical Universe and its Life Forms: Physical Science, Area B3 - Physical Universe and its Life Forms: Laborator Activity
Term:	fall 2003
Other:	
IGETC:	Area 5A - Physical Science
Term:	
Other:	

<p>Student Learning Outcomes:</p>	<p>SLO #1 Basic Knowledge</p> <p>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.)</p>
<p>Course Objectives:</p>	<ol style="list-style-type: none"> 1. Identify minerals that occur in igneous, metamorphic and sedimentary rocks that commonly occur in the Southeastern California desert region. 2. Compare and contrast the different types of folds that occur in the mountains of southern California, Mojave Desert, and Anza-Borrego region. 3. Determine the age relations of rocks in the Anza-Borrego region, and the Mojave Desert region using the principles of relative age dating. 4. Analyze the geologic history of the Southeastern California Desert region. Identify the surface features associated with faults. Describe how landforms are the surface expression of geologic processes by working with and constructing contour maps. 5. Identify surface features and landforms that are common in arid regions such as those found in the Mojave Desert and Anza-Borrego region.
<p>Major Topics:</p>	<p>I. Rock-forming minerals (3 hours, lab)</p> <ol style="list-style-type: none"> A. Physical properties B. Identification <p>II. Plutonic and Volcanic Igneous Rocks (3 hours, lab)</p> <ol style="list-style-type: none"> A. Composition and texture B. Formation C. Identification <p>III. Features of volcanic rocks in the deserts of southeastern California (3 hours, lab)</p> <ol style="list-style-type: none"> A. Lava types - aa & pahoehoe B. Cinder cones C. Bombs D. Ash deposits and tuff deposits E. Volcanic Domes <p>IV. Sedimentary Rocks (Mojave Desert and Anza-Borrego region) (1.5 hours, lab)</p> <ol style="list-style-type: none"> A. Fluvial deposits B. Alluvial fans <p>V. Metamorphic Rocks (Mojave Desert, Anza-Borrego region, mountains surrounding these areas) (1.5 hours, lab)</p> <ol style="list-style-type: none"> A. Composition and texture <p>VI. Running Water (Mojave River, streams in the Anza-Borrego region) (3 hours, lab)</p> <ol style="list-style-type: none"> A. Stream properties B. Erosional features in the Mojave Desert C. Erosional features in the Anza-Borrego region

VII. Erosion of Mountains (Mojave Desert and Anza-Borrego region) (3 hours, lab)

- A. Desert environments
- B. Fault scarps
- C. Formation of canyons
- D. Uplift and formation of the San Bernardino Mountains along the San Andreas fault
- E. Uplift and formation of mountains surrounding the Imperial Valley and along the San Andreas fault
- F. Erosion of the mountains surrounding the Mojave Desert and Anza-Borrego region

VIII. Field Trip (36 hours, lab)

Most of the instructional lab time will be in the field during a 4- day weekend field excursion. The geologic features of the Mojave Desert and the Sonoran Desert in the Anza Borrego area and the Imperial Valley will be examined at approximately thirty locations.

- A. Volcanic rock types Mojave Desert and Imperial Valley)
 - 1. Pahoehoe and aa
 - 2. Basalt and rhyolite
 - 3. Cinders, lapilli
 - 4. Tuff and ash deposits
- B. Plutonic rock types (San Bernardino mountains, Peninsular Ranges)
 - 1. Granite
 - 2. Gabbro
 - 3. Other rocks of intermediate composition
- C. Sedimentary rock types (Mojave Desert, Anza Borrego)
 - 1. Sandstone
 - 2. Shale
 - 3. Conglomerate
- D. Volcanic landforms (Mojave Desert and Imperial Valley adjacent to Anza Borrego)
 - 1. Cinder cones
 - 2. Rhyolite domes
 - 3. Lava tubes and Lava flows
- E. Sedimentary features (Mojave Desert, Anza-Borrego)
 - 1. Layering
 - 2. Bedding
 - 3. Graded bedding
 - 4. Cross-bedding
- F. Alluvial fans (north side of the San Bernardino Mountains, Anza-Borrego)
- G. Ancient pluvial lakes and shorelines (Mojave Desert and Anza-Borrego, Imperial Valley)
- H. Modern river erosion (Mojave River in Afton Canyon)
- I. Geologic history of rocks (mountains of southern California, Anza-Borrego, Imperial Valley)
- J. Faulting (mountains of southern California surrounding the Mojave Desert, Peninsular Ranges, Chocolate Mountains - observing the San Andreas fault)

Total Lecture Hours: 0

Total Laboratory Hours:	54
Total Hours:	54
Primary Method of Evaluation:	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Examine the rock samples from Southeastern California and provide the following information on your lab report. a. Name the sedimentary rock. b. Indicate the environment of deposition in which the rock formed. c. What water energy (speed) was involved? d. What size grains are visible?
Critical Thinking Assignment 1:	Construct a detailed cross-section of the structural provinces from the Mojave Desert southward toward the Coachella Valley and the Salton Sea. Interpret the geologic history of the rocks that are present in each of these areas.
Critical Thinking Assignment 2:	In a one-page essay, analyze the sedimentary depositional environments of rocks in the Mojave Desert and how their formation is influenced by motion along the San Andreas fault.
Other Evaluation Methods:	Completion, Fieldwork, Laboratory Reports, Matching Items, Multiple Choice, Other Exams
Instructional Methods:	Demonstration, Field trips, Lab
If other:	
Work Outside of Class:	Course is lab only - minimum required hours satisfied by scheduled lab time
If Other:	
Up-To-Date Representative Texts:	Herzig. Geology Laboratory of Southeastern California. 1.1 ed. El Camino College, 2017. (Discipline Standard) Qualifier Text: Laboratory Manual is created to cover course materials.
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite:	Prerequisite
Category:	standard
Requisite course(s): List both prerequisites and corequisites in this box.	Geology-1
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	Understand how different minerals form igneous, sedimentary, and metamorphic rocks learned in Geology 1. Understand the processes and importance of plate tectonics and extension beneath continental interiors learned in Geology 1. Knowledge of the processes of how faults create valleys and mountains learned in Geology 1.

	Understand the process of erosion in arid environments learned in Geology 1.
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	Eligibility for English 1A
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	<p>Students are expected to read and understand college level textbooks.</p> <p>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.</p>
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Charles T. Herzig
Date:	02/01/2002
Original Board Approval Date:	03/18/2002
Last Reviewed and/or Revised by:	Sara DiFiori
Date:	09/11/2023
Last Board Approval Date:	11/20/2023
Effective Term:	FALL 2024