



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	GEOL
Course Number:	30
Descriptive Title:	Geology Laboratory of Death Valley
Division:	Natural Sciences
Department:	Geology
Course Disciplines:	Earth Science
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.
Prerequisite:	Geology 1 with a minimum grade of C or concurrent enrollment
Co-requisite:	
Recommended Preparation:	Eligibility for ENGL C1000 or equivalent
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:	Prior to July 1992
Transfer UC:	Yes
Effective Date:	prior to fall 1992
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:	
Other:	

	IGETC: Area 5A - Physical Science
	Term:
	Other:
	CalGETC:
	Term:
	Other:
Student Learning Outcomes:	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.)
Course Objectives:	1. Analyze geologic cross sections and maps of the Death Valley region in order to demonstrate understanding of the geologic history of eastern California. 2. Identify common rock-forming minerals, sedimentary rocks, igneous rocks, and metamorphic rocks in the laboratory class and in the field. 3. Compare and contrast different types of faulting, including normal, reverse, and strike slip faults. 4. Use the principles of relative age dating to determine the geologic age Compare and contrast different mining techniques, including underground shaft, open pit/leach field, and underground brine mining. 5. Use contour maps and photographs to identify and list several surface features created by desert processes, including alluvial fans, playas, inselbergs, and dunes. 6. Identify seismic features such as scarps, sag ponds, horsts, grabens, and wine-glass canyons on contour maps, photographs, and in the field.
Major Topics:	I. Introduction (3 hours, lab) A. Minerals 1. Physical properties 2. Identification B. Geologic Time 1. Geologic cross sections 2. Geologic columns II. Igneous Rocks (to be investigated in Death Valley area) (2 hours, lab) A. Composition & texture B. Formation C. Identification III. Volcanism (to be studied in Death Valley) (2 hours, lab) A. Types of volcanoes

- B. Erupted materials and styles
- C. Field relations

- IV. **Sediments & Sedimentary rocks (2 hours, lab)**
 - A. Composition & texture
 - B. Formation
 - C. Identification

- V. **Contour Maps (3 hours, lab)**
 - A. Identify features
 - B. Construct maps

- VI. **Black Mountain (3 hours, lab)**
 - A. Metamorphic Rocks
 - 1. Composition & texture
 - B. Seismic Geology
 - 1. Types of faulting
 - 2. Identification of fault

- VII. **Desert Features (to be studied in Mojave Desert and Death valley) (3 hours, lab)**
 - A. Eolian processes (dunes, ventifacts, deflation)
 - B. Water erosion (canyons, inselbergs)
 - C. Deposits (alluvial fans, playa bajada)

- VIII. **Visual examination identifying features of the land. (2 hours, lab)**
- IX. **Death Valley Field Trip (34 hours, lab) Most of the class hours will be conducted in the Death Valley area during a 4-day weekend in the field**
 - A. Rock types observed
 - 1. Igneous
 - a. Basalt
 - b. Rhyolite
 - c. Tuff
 - d. Granite
 - 2. Sedimentary
 - a. Sandstone
 - b. Shale
 - c. Limestone

3. Metamorphic

- a. Gneiss
- b. Schist marble
- c. Breccia

B. Volcanic features

1. Cinder craters
2. Phreatic crater
3. Tuff
4. Basalt flows
5. Dikes (columnar jointing volcanic necks)

C. Sedimentary features

1. Layering
2. Bedding
3. Graded bedding
4. Cross-bedding

D. Geomorphic features and processes

1. Ancient shorelines of pluvial lakes
2. Rivers and streams
3. Weathering and erosion features (canyons, natural bridge)

E. Geologic history. The geologic history of the Death Valley region is studied and deduced.

1. Relative age dating methods
2. Field relationships

F. Structures

1. Tilted fault blocks
2. Normal faults
3. Horst and graben
4. Evidence for faulting escarpments
5. Offset features

G. Desert features

1. Playa
2. Alluvial fan
3. Desert pavement
4. Dunes
5. Ventifacts
6. Deflation

H. Gold mining locations

	1. Comparing old underground mining techniques 2. Modern open pit method
Total Lecture Hours:	0
Total Laboratory Hours:	54
Total Hours:	54
A.1. Primary Methods of Evaluation (Part 1 - CCN courses only):	
A.2. Primary Method of Evaluation (Part 2 - all courses; choose one):	2) Problem solving demonstrations (computational or non-computational)
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
Critical Thinking Assignment 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.
Critical Thinking Assignment 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?
Other Evaluation Methods:	Completion, Fieldwork, Laboratory Reports, Matching Items, Multiple Choice, Objective Exam
Instructional Methods:	Demonstration, Field trips, Lab
If other:	
Work Outside of Class:	Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting)
If Other:	Field trip is required in this class.
Up-To-Date Representative Texts:	DiFiori, Geology 30 Student Packet, Printery 2019. (Discipline Standard) "Rite in the Rain" Geologic Field Notebook.
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite:	Prerequisite
Category:	standard

Requisite course(s): List both prerequisites and corequisites in this box.	GEOL 1
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	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.
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 ENGL C1000 or equivalent
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	Ability to describe and record geologic processes in a laboratory activity or field report based upon class readings and field observations. Utilize comprehension and vocabulary strategies to improve reading rate. 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
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	

Course Created by:	W. Hirt & E.J. Baldwin
Date:	11/01/1977
Original Board Approval Date:	
Last Reviewed and/or Revised by:	Jwan Wageman
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