GEOL 1 Course Outline as of Fall 1984

CATALOG INFORMATION

Dept and Nbr: GEOL 1 Title: THE EARTH
Full Title: The Earth
Last Reviewed: 1/27/2020

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Not open to students who have completed Geology 4 or 10. Introduction to the basics of general geology, emphasizing the natural processes that govern and shape the earth. Overview of the origin and interpretation of rocks and minerals, volcanism, earthquakes and plate tectonics.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100.

Limits on Enrollment:

Schedule of Classes Information:
Description: Intro to the basics of general geology emphasizing the natural processes that govern & shape the earth. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100.
Limits on Enrollment:
Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	C	Natural Sciences	Fall 1984	
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B1	Physical Science	Fall 1984	
IGETC:	**Transfer Area**		Effective:	Inactive:
	5A	Physical Sciences	Fall 1981	

CSU Transfer:	Transferable	Effective:	Fall 1984	Inactive:
UC Transfer:	Transferable	Effective:	Fall 1984	Inactive:

CID:
CID Descriptor: GEOL 100 Physical Geology
SRJC Equivalent Course(s): GEOL1

Certificate/Major Applicable:
Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Provides the student with the theoretical, descriptive, and methodological experiences required to successfully understand general geology and its related concepts. Students participating in this course will have the opportunity to analyze the natural processes that govern and shape the earth and be able to answer questions specifically related to the major geologic concepts. Students completing this course should be able to comprehend and demonstrate some knowledgeability of geology through lecture discussions, reading assignments, written assignments, and examination.

Topics and Scope:

Course content will include but not be limited to the following areas stated on the course outline.
The nature and scope of geology: Development of concept of science, the scientific method and geology. Geology as it relates to our society through exploration for minerals, coal and petroleum products; Geologic Engineering and Atomic Energy and Geothermal Energy Resources.
Development of geologic philosophy using a historical approach (Archbishop Ussher to the present) to determine age of the earth and develop the concept of geologic time. The origin and development of North America and its inhabitants through geologic time.
Structure and composition of the earth: Division of earth's interior with emphasis on the elemental composition to the crust. Introduction to silicates and the silicon/oxygen tetrahedron using the atomic theory of matter.

Introduction to igneous, sedimentary, and metamorphic rocks and process through the rock cycle.
Igneous rocks: Classification based on texture and composition. Origin of magmas and final intrusive placement and subsequent volcanism.
Volcanism: Crystallization of magmas and resulting textures, classification and distribution of volcanoes. Types of eruptions: Peleean, Strombolian, etc.
Physical and chemical weathering: Weathering as a process destroying rocks and generating soil, surface debris and sediments. Special emphasis on chemical equations explaining oxidation, hydration, and carbonation of silicate minerals.
Sediments and sedimentary rocks: Source and nature of sediments; sedimentary textures and stratification; environments of deposition; lithification processes; classificaiton and description of sedimentary rocks.
Metamorphism and metamorphic rocks: Factors controlling metamorphism; examples of metamorphic environments and their relationship to igneous processes. Exposure to P-T phase diagrams; geothermal gradient.
Mass wasting: Relationships between slope, strength and stress in determining the probability of mass wasting. Processes of mass wasting as free fall, sliding, flowage, creep, and liquification.
Glaciers and glaciation: What is a glacier? Conditions necessary for the formation of a glacier. Formation of Alpine and Continental glaciers and their effect on the landscape. Pleistocene geology.
Underground water: Efluent vs. Influent streams and the movement of groundwater, recharge of ground water, artesiam systems, karst topography, hotsprings and geysers.
Running Water: Precipitation and stream flow. Analysis of stream parameters as capacity, load, discharge, etc. Energy requirements necessary for erosion, transportation, or deposition. Features of stream valleys, cycles of erosion, stream patterns and stream types.
Wind action: Erosion by wind, transportation of sand/dust sized particles, deposition of sand and the classification of dunes, desert landscapes.
Oceans and shorelines: Origin and distribution of oceanic sediments. The sea wave as a transporter of energy. Features formed by erosion, transportation of sediment, and subsequence deposition. Introduction to sedimentary facies and transgressive-regressive sequences. Evolution of coastlines.
Structural deformation of rocks: Classification of folds and faults. Elastic Rebound Theory, the nature of seismic energy, and its use to analyze the Earth's interior.
Earthquakes: Open-ended Richters and Modified Mercalli Intensity Scale. Distribution of hypercenter/epicenters, fault types causing quakes, association with volcanism. California as a seismic hazard.
Tectonic Theory: Continental Drift as proposed by Wegener, Convection Cell Theory, Paleomagnetism and the development of seafloor spreading. Discussion draws heavily the distribution and nature of volcanism and seismic activity.
Plate Tectonic Theory: The development of modern plate tectonic theory. Detailed analysis of constructive, destructive, and passive plate

boundaries.

Assignment:

Evaluation of student performance will be determined through examination (written and/or objective) and through at least one of the following written assignments: Comprehensive research paper, analytic essay, report and book reviews, extra credit reports, or field assessment. Students will be required to master textbook and research material independently outside class.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written homework, Reading reports, Essay exams, Term papers	Writing 15 - 30%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Exams	Problem solving 0 - 10%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, True/false, Matching items, Completion	Exams 60 - 75%

Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%

Representative Textbooks and Materials:
THE EARTH: Tarbuk
PHYSICAL GEOLOGY: Plummer
PHYSICAL GEOLOGY: Skinner
GENERAL GEOLOGY: Foster
PHYSICAL GEOLOGY: Judson