GEOL C161: ENVIRONMENTAL GEOLOGY

Item	Value
Curriculum Committee Approval Date	10/06/2023
Top Code	191400 - Geology
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
Local General Education (GE)	• CL Option 1 Natural Sciences (CB1)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 5A Physical Science (5A)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 5A Physical Science (5A)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B1 Physical Science (B1)

Course Description

An introduction to the fundamentals of Environmental Geology including the interactions between and impacts of humans with the environment in a geologic context. Course emphasizes the Earth system and connections between the geosphere, biosphere, atmosphere, and hydrosphere. Transfer Credit: CSU; UC. C-ID: GEOL 130.**C-ID:** GEOL 130.

Course Level Student Learning Outcome(s)

1. Use concepts and theories from environmental geology to explain the impact of humanity on resources and the environment.
2. Apply the scientific method to interpret and explain data to determine whether a proposed explanation, observation, or experimental result is consistent with a hypothesis.
3. Describe the constraints the environment places on human activity, the limit of humanity's ability to control geologic processes, and how environmental problems impact humanity.

Course Objectives

- 1. Demonstrate a fundamental understanding of concepts, principles and interactions of Earths systems including the hydrologic cycle, rock cycle, plate tectonics, geologic hazards, impacts of energy and resource usage, climate, climate change and the greenhouse effect, connectivity between geosphere, atmosphere, hydrosphere and biosphere.
- 2. Articulate how human activities impact the environment.
- 3. Recognize and understand how to mitigate geologic hazards.
- 4. Explain the Scientific Method.
- 5. Communicate complex course concepts effectively in writing and diagrams.

Lecture Content

Overview Plate Tectonics Geologic Time and Earths History Geologic Structures Earth Resources Minerals and Rocks Soils Water Conversion to Energy Human Impacts Exploitation and Use Population Waste Earth Systems Rock Cycle Carbon Cycle Nitrogen Cycle Water Cycle Weather and Climate Geologic Hazards Mass Wasting Flooding and Drought Earthquakes Tsunamis Volcanoes Pollution Groundwater Quality and Subsidence Extreme Weather Climate Change and Sea Level Change

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Instructional Techniques

Lectures and discussions on environmental problems and issues; question-and-answer sessions; small-group problem solving; exercises. Classroom instruction may be supplemented by media, guest speakers and field trips.

Reading Assignments

The students shall, each week, read the following: Selections from the textbook or similar materials Handouts given in class or provided electronically

Writing Assignments

The student, during the course of the semester, shall: Write answers to prompts provided and exchange findings with other classmates through in-class discussion or online discussion boards Write responses to case studies Write reports based on research of relevant topics

Out-of-class Assignments

The student, during the course of the semester, shall: Search for articles or materials that discuss research relevant to environmental geology Gather data by conducting library and/or web-based research assignments

Demonstration of Critical Thinking

Exams, written assignments, reports, projects, presentations, and problem solving exercises require the knowledge of several concepts that are applied to reach a conclusion and select/present a valid response. The student must be able to gather data, apply it to an environmental problem or issue, and communicate the conclusions.

Required Writing, Problem Solving, Skills Demonstration

Analyses of environmental issues and presentation of proposed solutions; reviews of case studies and expert interviews; responses to guiding questions; presentations and responses to content presented by others.

Eligible Disciplines

Earth science: Masters degree in geology, geophysics, earth sciences, meteorology, oceanography, or paleontology OR bachelors degree in geology AND masters degree in geography, physics, or geochemistry OR the equivalent. Masters degree required.

Textbooks Resources

1. Required Abbott, P.L. Natural Disasters, 12th ed. McGraw Hill, 2022 2. Required Montgomery, C. Environmental Geology, 11th ed. McGraw Hill, 2020

Other Resources

1. Coastline Library