

# GEOL R130: ENVIRONMENTAL GEOLOGY

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**Originator**

toneil

**College**

Oxnard College

**Discipline (CB01A)**

GEOL - Geology

**Course Number (CB01B)**

R130

**Course Title (CB02)**

Environmental Geology

**Banner/Short Title**

Environmental Geology

**Credit Type**

Credit

**Start Term**

Fall 2021

**Catalog Course Description**

Environmental Geology is a study of the interaction of humans and the Earth, with emphasis on geologic hazards such as earthquakes, volcanic activity, landslides, and flooding; resources such as energy, water, and minerals; disposal of wastes, pollution, and global warming. This course emphasizes the Earth systems and connections between the geosphere, biosphere, atmosphere, and hydrosphere. C-ID: GEOL 130. Transfer credit: CSU;UC. C-ID: GEOL 130.

**Taxonomy of Programs (TOP) Code (CB03)**

1914.00 - Geology

**Course Credit Status (CB04)**

D (Credit - Degree Applicable)

**Course Transfer Status (CB05) (select one only)**

A (Transferable to both UC and CSU)

**Course Basic Skills Status (CB08)**

N - The Course is Not a Basic Skills Course

**SAM Priority Code (CB09)**

E - Non-Occupational

**Course Cooperative Work Experience Education Status (CB10)**

N - Is Not Part of a Cooperative Work Experience Education Program

**Course Classification Status (CB11)**

Y - Credit Course

**Educational Assistance Class Instruction (Approved Special Class) (CB13)**

N - The Course is Not an Approved Special Class

**Course Prior to Transfer Level (CB21)**

Y - Not Applicable

**Course Noncredit Category (CB22)**

Y - Credit Course

**Funding Agency Category (CB23)**

Y - Not Applicable (Funding Not Used)

**Course Program Status (CB24)**

1 - Program Applicable

**General Education Status (CB25)**

Y - Not Applicable

**Support Course Status (CB26)**

N - Course is not a support course

**Field trips**

Will not be required

**Grading method**

Letter Graded

**Does this course require an instructional materials fee?**

No

**Repeatable for Credit**

No

**Is this course part of a family?**

No

**Units and Hours**

**Carnegie Unit Override**

No

**In-Class**

**Lecture**

**Minimum Contact/In-Class Lecture Hours**

52.5

**Maximum Contact/In-Class Lecture Hours**

52.5

**Activity**

**Laboratory**

**Total in-Class**

**Total in-Class**

**Total Minimum Contact/In-Class Hours**

52.5

**Total Maximum Contact/In-Class Hours**

52.5

**Outside-of-Class**

**Internship/Cooperative Work Experience**

**Paid**

**Unpaid**

## **Total Outside-of-Class**

**Total Outside-of-Class**

**Minimum Outside-of-Class Hours**

105

**Maximum Outside-of-Class Hours**

105

## **Total Student Learning**

**Total Student Learning**

**Total Minimum Student Learning Hours**

157.5

**Total Maximum Student Learning Hours**

157.5

**Minimum Units (CB07)**

3

**Maximum Units (CB06)**

3

## **Student Learning Outcomes (CSLOs)**

<b>Upon satisfactory completion of the course, students will be able to:</b>	
1	Describe the scientific method as applied in the earth sciences
2	Explain the of plate tectonics as related to natural hazards and earth resources
3	Describe common earth materials and their relationship to environmental hazards
4	Explain the causes and effects of global climate change

## **Course Objectives**

<b>Upon satisfactory completion of the course, students will be able to:</b>	
1	Demonstrate a fundamental understanding of concepts, principles, and interactions of Earth's systems including: Hydrologic Cycle, Rock Cycle, Plate Tectonics, Geologic Hazards, Impacts of Energy and Resource Usage, Climate, Climate Change, and the Greenhouse Effect
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

## **Course Content**

### **Lecture/Course Content**

1. Scientific Method
2. Systems
  - a. Open, Closed, and Isolated Systems
  - b. Earth Systems
    - i. Rock Cycle
    - ii. Carbon Cycle
    - iii. Nitrogen Cycle
    - iv. Water Cycle
3. Formation of the Earth and Plate Tectonics
  - a. Geologic Time and Earth History
  - b. Earth's Interior
  - c. Plate Tectonics
4. Geologic Structures

- a. Faults
- b. Folds
- 5. Earth Resources
  - a. Rocks and Minerals
  - b. Soils
  - c. Water
  - d. Energy
- 6. Human Impacts on Earth Resources
  - a. Exploitation and Use
  - b. Population
  - c. Pollution
- 7. Weather and Climate
  - a. Extreme Weather
  - b. Climatic Change
  - c. Sea Level Change
- 8. Geologic Hazards
  - a. Mass Wasting
  - b. Flooding and Drought
  - c. Earthquakes
  - d. Tsunamis
  - e. Volcanoes
  - f. Pollution
  - g. Groundwater Quality and Subsidence

#### **Laboratory or Activity Content**

None

#### **Methods of Evaluation**

**Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):**

Problem solving exercises

Written expression

**Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):**

Essay exams

Essays

Group projects

Individual projects

Objective exams

Oral presentations

Problem-Solving Assignments

Problem-solving exams

Quizzes

Reports/papers

Research papers

#### **Instructional Methodology**

**Specify the methods of instruction that may be employed in this course**

Audio-visual presentations

Computer-aided presentations

Collaborative group work

Class activities

Class discussions

Distance Education

Demonstrations

Field trips

Group discussions

Guest speakers

Instructor-guided interpretation and analysis

Internet research

Lecture

Small group activities

**Describe specific examples of the methods the instructor will use:**

1. Hands on demonstration and illustration of the rock cycle. Student groups are given samples of rocks and asked to identify where they fit in the rock cycle.
2. Instructor led discussions of significant geologic events that affect Southern California, such as landslides, earthquakes, and beach erosion.
3. In class viewing of PowerPoint, videos, and Google Earth to analyze the scale of geologic events such as earthquakes, mountain building, and volcanism.

## **Representative Course Assignments**

### **Writing Assignments**

1. Assigned exercises (e.g., cause of earthquakes, cause of beach erosion) are to be completed by students outside of class and turned in for evaluation and grading.
2. Summarize the pertinent information from videos on key areas of study.
3. Essay assignment such as describing the meandering in the Santa Clara River.

### **Critical Thinking Assignments**

1. Propose how to reduce the impact of beach erosion at Hueneme.
2. Consider the erosion system and how it affects where we live.

### **Reading Assignments**

1. Each chapter of text studied in class is to be read by students prior to the corresponding lecture. For example, the chapter about earthquakes will be read by students prior to the earthquake lectures.
2. Students may be assigned reading of selected articles on physical geology topics using journals/periodicals such as: Scientific American, Nature, and National Geographic.

### **Other assignments (if applicable)**

1. Join a group for a field activity that protects or restores the natural landscape. Recognize the geologic processes or principles impacting the area.
2. Visit Hueneme Beach and observe the beach erosion. Recognize the geologic structures.

## **Outside Assignments**

### **Representative Outside Assignments**

1. Answer essay questions describing earth's systems.
2. Write notes in the workbook from provided information or textbook to prepare for exams.
3. Write a summary of instructor-made videos and other video resources.
4. Participate in on-line discussion boards on course material. Present and answer relevant questions.
5. Use on-line learning tools and practice quizzes to prepare for exam.
6. Visit a local area and interpret natural phenomena discussed in class.
7. Join a group for a field activity that protects or restores a natural landscape, or relates to natural resources.

## **Articulation**

### **C-ID Descriptor Number**

GEOL 130

### **Status**

Approved

## **District General Education**

### **A. Natural Sciences**

### **B. Social and Behavioral Sciences**

### **C. Humanities**

### **D. Language and Rationality**

### **E. Health and Physical Education/Kinesiology**

### **F. Ethnic Studies/Gender Studies**

## **CSU GE-Breadth**

### **Area A: English Language Communication and Critical Thinking**

### **Area B: Scientific Inquiry and Quantitative Reasoning**

### **Area C: Arts and Humanities**

### **Area D: Social Sciences**

### **Area E: Lifelong Learning and Self-Development**

## **CSU Graduation Requirement in U.S. History, Constitution and American Ideals:**

## **IGETC**

### **Area 1: English Communication**

### **Area 2A: Mathematical Concepts & Quantitative Reasoning**

### **Area 3: Arts and Humanities**

### **Area 4: Social and Behavioral Sciences**

### **Area 5: Physical and Biological Sciences**

### **Area 6: Languages Other than English (LOTE)**

## **Textbooks and Lab Manuals**

### **Resource Type**

Textbook

### **Description**

Montgomery, Carla. *Environmental Geology* (11). New York, McGraw-Hill. 2020

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### **Resource Type**

Other Instructional Materials

### **Description**

Internet sources.

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### **Resource Type**

Other Instructional Materials

**Description**

videos.

**Resource Type**

Other Instructional Materials

**Description**

PowerPoint slides.

**Resource Type**

Other Instructional Materials

**Description**

Wall maps.

**Distance Education Addendum****Definitions****Distance Education Modalities**

Hybrid (51%–99% online)

Hybrid (1%–50% online)

100% online

**Faculty Certifications**

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

**Regular Effective/Substantive Contact****Hybrid (1%–50% online) Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Regular use of asynchronous discussion boards encourages various types of interaction and critical thinking skills among all course participants. Questions and topics posed will allow students to discuss, compare and contrast, identify, and analyze elements of the course outcomes. Other discussion boards may be used for Q&A and general class discussion by students and instructor to facilitate student success and strengthen student learning outcomes.
E-mail	E-mail, class announcements and various learning management system tools will be used to regularly communicate with all students on matters such as clarification of class content, reminders of upcoming assignments and/or course responsibilities, to provide prompt feedback to students on coursework to facilitate student learning outcomes, or to increase the role of an individual educator in the academic lives of a student. Students will be given multiple ways to email instructor through both the learning management system inbox and faculty provided email accounts.

Synchronous Dialog (e.g., online chat)

Instructor may provide a set time each week where s/he will be available for synchronous chat and be available in the discussion board and can answer questions in live time.

Video Conferencing

Video tools such as ConferZoom can be used to provide live synchronous or asynchronous sessions with students. ADA compliance will be upheld with Closed Captioning during the session or of the recorded session. Video Conferences will be used to facilitate SLOs and student-to-student group meetings will also be encouraged.

Face to Face (by student request; cannot be required)

Students will have direct face-to-face contact with instructor during weekly class meetings. This time will provide the opportunity for students to discuss and ask questions about the material to facilitate student learning objectives and course outcomes. The instructor will also hold weekly, scheduled office hours for students to be able to meet and discuss course materials or individual progress. Students can request additional in-person or web conferencing meetings with faculty member as needed. Faculty may encourage online students to form "study groups" in person or online.

### Hybrid (51%–99% online) Modality:

#### Method of Instruction

#### Document typical activities or assignments for each method of instruction

Asynchronous Dialog (e.g., discussion board)

Regular use of asynchronous discussion boards encourages various types of interaction and critical thinking skills among all course participants. Questions and topics posed will allow students to discuss, compare and contrast, identify, and analyze elements of the course outcomes. Other discussion boards may be used for Q&A and general class discussion by students and instructor to facilitate student success and strengthen student learning outcomes.

E-mail

E-mail, class announcements and various learning management system tools will be used to regularly communicate with all students on matters such as clarification of class content, reminders of upcoming assignments and/or course responsibilities, to provide prompt feedback to students on coursework to facilitate student learning outcomes, or to increase the role of an individual educator in the academic lives of a student. Students will be given multiple ways to email instructor through both the learning management system inbox and faculty provided email accounts.

Synchronous Dialog (e.g., online chat)

Instructor may provide a set time each week where s/he will be available for synchronous chat and be available in the discussion board and can answer questions in live time.

Video Conferencing

Video tools such as ConferZoom can be used to provide live synchronous or asynchronous sessions with students. ADA compliance will be upheld with Closed Captioning during the session or of the recorded session. Video Conferences will be used to facilitate SLOs and student-to-student group meetings will also be encouraged.

Face to Face (by student request; cannot be required)

Students will have direct face-to-face contact with instructor during weekly class meetings. This time will provide the opportunity for students to discuss and ask questions about the material to facilitate student learning objectives and course outcomes. The instructor will also hold weekly, scheduled office hours for students to be able to meet and discuss course materials or individual progress. Students can request additional in-person or web conferencing meetings with faculty member as needed. Faculty may encourage online students to form "study groups" in person or online.



**100% online Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Regular use of asynchronous discussion boards encourages various types of interaction and critical thinking skills among all course participants. Questions and topics posed will allow students to discuss, compare and contrast, identify, and analyze elements of the course outcomes. Other discussion boards may be used for Q&A and general class discussion by students and instructor to facilitate student success and strengthen student learning outcomes.
E-mail	E-mail, class announcements and various learning management system tools will be used to regularly communicate with all students on matters such as clarification of class content, reminders of upcoming assignments and/or course responsibilities, to provide prompt feedback to students on coursework to facilitate student learning outcomes, or to increase the role of an individual educator in the academic lives of a student. Students will be given multiple ways to email instructor through both the learning management system inbox and faculty provided email accounts.
Synchronous Dialog (e.g., online chat)	Instructor will provide a set time each week where s/he will be available for synchronous chat and question and answers with students.
Video Conferencing	Video tools such as ConferZoom can be used to provide live synchronous or asynchronous sessions with students. ADA compliance will be upheld with Closed Captioning during the session or of the recorded session. Video Conferences will be used to facilitate SLOs and student-to-student group meetings will also be encouraged.
Face to Face (by student request; cannot be required)	The instructor will hold weekly, scheduled office hours either in person or via-web conferencing, for students to be able to meet and discuss course materials or individual progress. Students can request additional in-person or web conferencing meetings with faculty member as needed. Faculty may encourage online students to form "study groups" in person or online.
Telephone	Students can request for instructor to call or vice versa in order to answer one-on-one questions about course material or student progress.
Other DE (e.g., recorded lectures)	Faculty will use a variety of ADA compliant tools and media integrated within the learning management system to help students reach SLO competency. Tools may include: <ul style="list-style-type: none"> <li>o Recorded Lectures, Narrated Slides, Screencasts</li> <li>o Instructor created content</li> <li>o OC Online Library Resources</li> <li>o Canvas Peer Review Tool</li> <li>o Canvas Student Groups (Assignments, Discussions)</li> <li>o 3rd Party (Publisher) Tools (MyOpenMath)</li> <li>o Websites and Blogs</li> <li>o Multimedia (YouTube, Films on Demand, 3CMedia, Khan Academy, etc.)</li> </ul>

**Examinations****Hybrid (1%–50% online) Modality**

Online  
On campus

**Hybrid (51%–99% online) Modality**

Online  
On campus

**Primary Minimum Qualification**

EARTH SCIENCE

**Review and Approval Dates****Department Chair**

09/02/2020

**Dean**

09/02/2020

**Technical Review**

09/23/2020

**Curriculum Committee**

09/23/2020

**Curriculum Committee**

10/28/2020

**CCCCO**

MM/DD/YYYY

**Control Number**

CCC000544072

**DOE/accreditation approval date**

MM/DD/YYYY