



## GEO 1060

**Division:** Natural Science and Mathematics

**Department:** Geology

**Course:** GEO 1060

**Title:** Introduction to Environmental Geology

**Catalog Description:**

This course is a study of the geological processes that affect or are affected by human activity such as earthquakes, volcanic hazards, flooding, waste, mineral and energy resources. This course is designed for non-majors. A field trip may be required.

**General Education Requirements:** Physical Science

**Semesters Offered:** Spring

**Credit/Time Requirement:** Credit: 3; Lecture: 3; Lab: 0

**Clock/Hour Requirements:** 0

**Offered for Non-Credit:** No

**Corequisites:** GEO 1065

**Justification:**

This course is a general education class at Snow College. This course is intended to increase the student's knowledge of the geologic processes that often present direct threats to the health and safety of humans. The course is also the first exposure that most students have to the science of geology and so it may act to attract some students to the major. This course is a common course number at other geology departments in the Utah state college system.

**Student Learning Outcomes:**

Upon successful completion of this course, the student will be able to:

- understand earth's resources, renewable vs non-renewable
- understand the factors that affect environmental geology such as population, standard of living, technology, etc
- understand the composition and structure of the earth
- understand the theory of plate tectonics and how it controls hazards such as earthquakes, volcanoes, tsunami etc.
- understand earthquakes in terms of where they are a hazard, how they are predicted and measured, what controls the damage
- understand volcanic eruptions in terms of types of eruptions, where they are a hazard, how they are predicted,
- understand the effects of volcanic eruptions
- understand flooding in terms of where it is a hazard, how floods are controlled, predicted and how humans can make them worse

- identify the hazards of living in coastal areas and what can be done to reduce the risk of property damage
- list the types of fossil fuel, how they form and how they are extracted and the negative effects of fossil fuel consumption
- understand the alternative energy sources, the positive and negative aspects involved in their use
- understand the basic geological associations of major mineral resources and the problem associated with their extraction
- understand the problems associated with mineral extraction
- understand the formation of soil, problems that cause soil loss and methods of prevention
- understand groundwater, how it works, where it is found, problems associated with it such as overuse, urbanization, contamination
- understand the issues related to waste such as sewage, household waste and disposing and storing toxic and nuclear waste
- identify the source of major atmospheric pollutants and the effects they have on the atmosphere
- understand global warming: its causes, effects

### **Content:**

This course will include:

- Earth Systems: Basic Principles of Systems and Cycles
- Earth Materials: Rocks and Minerals
- Internal Structure of the Earth
- Plate Tectonics
- Earthquakes
- Volcanoes
- Tsunami
- Mass Wasting
- Flooding
- Coastal Hazards
- Water Resources
- Fossil Fuels
- Alternative energy sources
- Mineral Resources
- Soil
- Waste
- Air and Water Pollution
- Climate Change

### **General Education Outcomes:**

- 4) Retrieve, evaluate, interpret, and deliver information through a variety of traditional and electronic media. Students will be assigned an environmental portfolio of the town of their choice. A mixture of media will be required for references including newspaper, journals, books, websites and local government offices. Feedback will be given for initial and final drafts research.

7) Apply scientific reasoning to a variety of contexts.

Students will be asked to apply the principles of environmental geology on exams and quizzes. Feedback will come from the quizzes and exams. Students will also be required to apply these concepts to the interpretation of hazards, resources and waste as demonstrated through area specific portfolios.

**Key Performance Indicators:**

- Quizzes and Homework: 10%
- 2-4 Exams: 40%
- Portfolio: 20%
- Comprehensive Final: 25%
- Field Trip: 5%
- Percentages are approximate.

**Representative Text and/or Supplies:**

- Carla Montgomery, *Environmental Geology*, current edition.

**Optimum Class Size:** 24

**Maximum Class Size:** 30

**Signatures:**

I hereby submit this course syllabus:

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Renee Faatz, , Associate Professor

I hereby find this course consistent with the goals and resources of the Geology Department:

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Renee Faatz, , Associate Professor, Chair

I hereby find this course consistent with the goals and resources of the Natural Science and Mathematics Division:

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Dan Black, EdD, Associate Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

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Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

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Michelle Olsen, MLS, Campus Librarian (Richfield Campus)