



Geology (GEOL) 207

Introduction to Environmental Geology (Revision 4)

Status:

Replaced with new revision, see the [course listing](#) for the current revision

Delivery mode:

Individualized study online with eText, and a Home Lab. This course is charged a lab fee

Credits:

3

Area of study:

Science

Prerequisite:

None

Precluded:

None

Challenge:

GEOL 207 has a challenge for credit option.

Faculty:

[Faculty of Science and Technology](#)

Overview

As a discipline, environmental geology deals with using geological knowledge to address interactions between humans and the physical environment: the biosphere, the lithosphere, the hydrosphere, and, to some degree, the atmosphere.

Environmental geology is a multidisciplinary subject that covers a broad range of topics, ranging from Earth materials and their use to Earth processes, including natural hazards and their impact on human lives. The environmental effects of exploring Earth resources is also an integral component of the course.

Outline

- The course is divided into 16 units.
- Unit 1: Basic Concepts in Environmental Geology
- Unit 2: The Internal Structure of Earth
- Unit 3: Minerals and Rocks
- Unit 4: Ecology and Geology
- Unit 5: Introduction to Natural Hazards
- Unit 6: Earthquakes and Related Phenomena
- Unit 7: Volcanic Activity
- Unit 8: Rivers and Flooding
- Unit 9: Slope Processes, Landslides, and Subsidence
- Unit 10: Coastal Processes
- Unit 11: Water Resources
- Unit 12: Water Pollution
- Unit 13: Mineral Resources
- Unit 14: Energy Resources
- Unit 15: Soils and the Environment

- Unit 16: Global Climate Change


Learning outcomes

Upon completion of this course, you should be able to


- outline how geology relates to the environment and discuss how environmental problems and the rise in human population are connected.
- explain the mechanisms behind plate tectonics and plate motion; describe the basic internal structure of the Earth as well as the Earth's composition.
- outline the major groups of the main rock-forming minerals; describe igneous, metamorphic and sedimentary rocks; and explain the roles rocks and minerals play in the environment.
- describe the conditions that make some natural Earth processes hazardous to people and discuss the role of science in evaluating natural hazards.
- outline the mechanisms behind geological processes that include earthquakes, volcanoes, and landslides and identify associated hazards and ways of minimizing their effects.
- describe the basic wave processes and identify the different forms and causes of coastal erosion and how they can be minimized.
- explain the fundamental components of the hydrologic (water) cycle and outline the interactions that occur between surface water and groundwater; describe processes that influence water supply, including water pollution.
- discuss the factors that control the distribution of mineral resources, including fossil fuels, and explain the environmental impact of mineral development.
- describe the role nuclear energy and renewable energy resources can play as alternative energy resources.
- describe processes involved in soil development and explain the role soils play in land use planning; outline the primary engineering properties of soils.
- describe the basics of Earth system science and how it can be used to


study global climate change.

Evaluation

Your final grade in GEOL 207 will be based on your performance in 10 laboratory assignments and two examinations. The passing grade for GEOL 207 is **C- (60 percent)** . You must average 60 percent on the assignments, and you must receive a grade of at least 60 percent to pass an examination. The table below lists the components that contribute to your grade and the credit weight of each.

Activity	Weight
10 Lab Assignments - (5% each)	50%
Midterm Exam	20%
Final Exam	30%
Total	100%

The **midterm and final examinations** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the **Exams and grades**  section of the Calendar.

To learn more about assignments and examinations, please refer to Athabasca University's **online Calendar** .

Materials

Keller, E. A. (2012). *Introduction to Environmental Geology* (5th ed.). Upper Saddle River, NJ: Prentice Hall.  (eText)

Foley, D., McKenzie, G. D., & Utgard, R. O. (2009). *Investigations in*

Environmental Geology (3rd ed.). Upper Saddle River, NJ: Prentice Hall.

(PDF)  (PDF)

eText

Registration in this course includes an electronic textbook. For more information on **electronic textbooks** [↗](#), please refer to our **eText Initiative site** [↗](#).

Other Materials

The course materials include a Study Guide, Course Orientation, and 10 Lab Assignments. A lab kit is also sent to students by postal mail.

Challenge for credit

Overview

The challenge for credit process allows you to demonstrate that you have acquired a command of the general subject matter, knowledge, intellectual and/or other skills that would normally be found in a university-level course.

Full information about **challenge for credit** [↗](#) can be found in the Undergraduate Calendar.





Evaluation

To **receive credit** [↗](#) for the GEOL 207 challenge registration, you must achieve a grade of at least **C- (60 percent)**  on the examination.

Activity	Weight
Examination	100%
Total	100%

 [Challenge for credit course registration form](#)

Important links

- › [Academic advising](#) 
- › [Program planning](#) 
- › [Request assistance](#) 
- › [Support services](#) 

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

Opened in Revision 4, March 17, 2021

Updated July 16, 2024

View [previous revision](#) 
