

GEOLOGY 103
ENVIRONMENT OF THE EARTH

BULLETIN INFORMATION

GEOL 103 - Environment of the Earth (4 credit hours)

Course Description:

Analysis of basic energy cycles of the earth. Interaction of human activity with earth processes to affect the environment.

Note: Three lectures and three laboratory hours each week. Field trips required.

SAMPLE COURSE OVERVIEW

This course describes the earth as a system, the various processes that affect humankind. It explains the makeup of the earth, its resources and the various uses and misuses of the same. This course will provide you with an excellent background on basic concepts of geology, rocks, minerals and earth processes; information on natural hazards; relation between natural resources and pollution and environmental management of human activities and earth resources. Topics include:

1. foundations of environmental geology
2. hazardous earth processes
3. human interactions with the environment
4. minerals, energy and environment
5. global change, land use and decision-making

ITEMIZED LEARNING OUTCOMES

Upon successful completion of Geology 103, students will be able to:

1. Demonstrate basic understanding of the scientific method
2. Explain the principal processes involved in Earth formation and evolution and the rock cycle
3. Identify and explain the scientific processes involved in natural hazards
4. Discuss water and energy resources including the formation of oil and natural gas and pollution of surface and groundwater
5. Discuss the evolution of the global climate over geological time and the influence of humans on the present day climate

SAMPLE REQUIRED TEXTS/SUGGESTED READINGS/MATERIALS

1. *Environmental Geology*, Eighth Edition, Edward A Keller, Pearson Prentice Hall, NJ, 2000
ISBN 0-13-022466-9; QE38.K45 2000

SAMPLE ASSIGNMENTS AND/OR EXAM

This course employs a variety of methods to measure student performance and mastery of the concepts and principles presented.

- 1. Three in class 1-hour tests:** Students are tested at the end of each section of the course. Tests are closed book and closed notes. The format of test is mostly multiple-choice with some fill-in the blank and essay questions. All questions come from topics covered in lectures, the reading assignments, and the laboratory.
- 2. Final Exam:** The final exam is not cumulative and covers only material in the final section of the class. The final exam is closed book and closed notes. The format of the exam is mostly multiple-choice with some fill-in the blank and essay questions. All questions come from topics covered in lectures, the reading assignments, and the laboratory.
- 3. Lab:** Laboratory exercises supplement the material covered in the classroom. Weekly laboratory exercises are based on hands-on analysis of geologic materials, processes (e.g., weathering), and concepts, and require students to document their work on laboratory handouts.

SAMPLE COURSE OUTLINE WITH TIMELINE OF TOPICS, READINGS/ASSIGNMENTS, EXAMS/PROJECTS

Week 1	Introduction to the class Chapter 1: Philosophy and concepts
Week 2	Chapter 2
Week 3	Chapter 3: Soil – formation, types and characterization Soil – Impact on environment <i>Laboratory Exercises: Minerals</i>
Week 4	Review of the first section of the course Test 1 <i>Laboratory Exercises: Rocks</i>
Week 5	Chapter 4: Introduction to Natural Hazards Chapter 5: Rivers and Flooding <i>Laboratory Exercises: Geological Time</i>
Week 6	Chapter 6: Slope processes, landslides and subsidence Chapter 7: Earthquakes <i>Laboratory Exercises: Earthquakes</i>
Week 7	Chapter 8: Volcanoes Chapter 9: Coastal processes

Laboratory Exercises: Topographical Maps

- Week 8 Review of natural hazards
Test 2
Laboratory Exercises: Weathering
- Week 9 Chapter 10: Water Resources
Chapter 11: Water Pollution
Laboratory Exercises: Properties of Soils
- Week 10 Chapter 12: Waste Management
Chapter 13: Geologic aspects of human health
Laboratory Exercises: Soil Infiltration
- Week 11 Chapter 14: Mineral Resources
Review on resources and pollution and waste management
Laboratory Exercises: Groundwater
- Week 12 Test 3
Chapter 15: Energy Resources
Laboratory Exercises: River Discharge Rates
- Week 13 Chapter 16: Global climate change
Chapter 17: Air pollution
Laboratory Exercises: Congaree River
- Week 14 Chapter 18: Geology society and the future
Final Review
Review- Energy resources, climate change, air pollution, societal issues
Laboratory Exercises: Make-up lab if permitted
- Week 15 **Final Exam according to University exam schedule**