

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.

- 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	
	Laboratory Exercises: Minerals		
Week 4	Review of the first section of the course Test 1		
	Laboratory Exercises: Rocks		
Week 5	Chapter 4:	Introduction to Natural Hazards	
	Chapter 5:	Rivers and Flooding	
	Laboratory E	xercises: Geological Time	
Week 6	Chapter 6:	Slope processes, landslides and subsidence	
	Chapter 7:	Earthquakes	
	Laboratory E	xercises: Earthquakes	
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		