University of South Carolina
Carolina Core

GEOLOGY 110
CULTURAL GEOLOGY

BULLETIN INFORMATION
GEOL 110 - Cultural Geology (3 credit hours)
Course Description:
The growth of geological concepts, scientific and non-scientific. The impact of geological factors on human affairs. The role of time and evolution (biological and physical). Restricted to non-science majors

SAMPLE COURSE OVERVIEW
The course is intended for non-science majors. The course will discuss geological processes and their impact on society, with emphasis on topics of current interest. Some of the subjects to be covered:
Energy resources, distribution, and short and long term potential, including fossil fuels (oil, natural gas, coal), nuclear, and renewable energy sources, including policy decisions facing society and government entities
Catastrophic events and their influence on past, present, and future civilizations, including meteor impact, volcanic eruptions, and earthquakes.
Climate change, including the underlying scientific basis, past and future impacts on society, and policy decisions facing society and government entities.
The ultimate goal of this course is to be able to make informed decisions about geological and environmental issues that impact our daily lives and be aware of the role scientific data plays in personal and public policy decisions.

ITEMIZED LEARNING OUTCOMES
Upon successful completion of Geology 110, students will be able to:

1. Explain the fundamentals of rock, carbon and water cycles
2. Explain how fundamental geological, physical and chemical processes impact the distribution of energy resources
3. Demonstrate understanding of and explain the environmental impacts of both the extraction and use of fossil fuels
4. Demonstrate understanding of and explain the potential and limitations of renewable energy sources
5. Explain how the concept of a "critical resource" (for example, salt, timber, petroleum) has influenced past and present societies, and the role of technology in overcoming the constraints of critical resources
6. Demonstrate understanding of and explain the role of catastrophic meteor impacts on the existence and evolution of life on earth

7. Demonstrate use of basic geologic principles to develop a first-order hypothesis on the distribution of earthquakes and volcanoes on the planet and the relative risk to society of those phenomena
8. Explain the underlying scientific principles behind the reconstruction of global temperature changes over recent geologic time
9. Evaluate a simple dataset of proxy temperature indicators to form a simple hypothesis for past climate change
10. Apply the underlying principles of climate science to understand the potential impact of long term climate change on societies around the globe, and to formulate basic hypotheses, evaluate data and develop defensible conclusions related to the strategies for mitigating the effects of climate change

SAMPLE REQUIRED TEXTS/SUGGESTED READINGS/MATERIALS

No required textbook. The nature of this topic is not covered in one individual textbook. We will distribute some handouts, post slides from the lectures on Blackboard in advance of the lecture, and make many suggestions for readings and Internet investigations, and go over a lot of topics in class.

SAMPLE ASSIGNMENTS AND/OR EXAMS

1. **Four Exams:** There will be three (3) midterm exams and the final exam. The exams will be multiple choice questions designed to evaluate student understanding of the basic terminology and principles covered in the lectures

2. **Quizzes:** There will be short daily quizzes using the iClicker or similar technology. The quizzes are designed to simulate the scientific method of inquiry. The quizzes will be based on concepts presented during the class and the students will be asked to formulate hypotheses and draw conclusions based on the data presented in class.

3. **Geology in the News Scrapbook**: Students will keep a regular blog on Blackboard submitting and commenting on geologic and environmental events and policy discussions appearing in daily and weekly mainstream news sources. Two to three entries per week are expected. At the end of the semester, a 4-5 page paper will be submitted that identifies a common theme or topic and synthesizes the articles or a subset of the articles in the context of the chosen theme.

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

Week 1 Introduction, Policies, Basic Scientific principles related to Energy Resources

Week 2 Energy Overview

Week 3 Petroleum

Week 4 Other Energy Issues
Exam 1

Week 5 Uniformitarianism and Catastrophic Events
Meteor Impacts

Week 6 Volcanoes and Earthquakes

Week 7 Scrapbook Q&A
Exam 2

Week 8 Solar Effects on Climate

Week 9 Climate Proxies

Week 10 Climate and Politics

Week 11 Effects of Climate Change
Exam 3

Week 12 Effects of Climate Change

Week 13 Individual and Government Response to Climate Change

Week 14 Mitigation of Climate Change

Week 15 Where do we go from here?
Final Exam review

Week 16 **Final Exam according to University exam schedule**