COMMON COURSE OUTLINE: Course discipline/number/title: ESCI 1144 Environmental Geology

A. CATALOG DESCRIPTION
1. Credits: 4
2. Hours/Week: 3 lecture/ 2 lab
3. Prerequisites (Course discipline/number): Test into developmental reading
4. Co-requisites (Course discipline/number): 
5. MnTC Goals (if any): Goal 2/Critical Thinking, Goal 3/Natural Sciences, Goal 10/People and the Environment

This course examines the relationship between geology and short-term human concerns (periods of no more than a few hundred years). Topics include earthquake hazards, volcanoes, flooding, landslides/mass wasting, groundwater and surface water problems, radioactive waste disposal, energy and mineral resources and radon. Environmental issues and effects on society are a major focus.

B. DATE LAST REVISED (Month, year): March, 2011

C. OUTLINE OF MAJOR CONTENT AREAS:
Topics may include:
1. Philosophical principles of environmental geology
2. Population growth
3. Plate tectonics
4. Earthquakes
5. Volcanoes
6. Rivers and Flooding
7. Coastal erosion
8. Mass Wasting: Slumps and Landslides
9. Global Change
10. Water resources
11. Mineral resources
12. Energy resources
13. Waste disposal and pollution

D. LEARNING OUTCOMES (GENERAL): The student will be able to:
1. Evaluate societal issues from a natural science perspective and make informed judgments about science related topics and policies.
2. Assess the hazards associated with geologic phenomena such as river flooding, earthquakes, volcanoes and landslides and propose strategies for mitigating them.
3. Determine the value of resources such as water, minerals and energy resources and propose strategies for responsible and sustainable use of those resources.

E. LEARNING OUTCOMES (MNTC):
Goal 2/Critical Thinking: The student will be able to:
1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive and conscious of bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives, which can give alternative meaning to a given problem.
3. Analyze the logical connections between facts, goals and assumptions relevant to a problem; evaluate claims, which may be said to follow from them.
4. Describe and improve one’s own critical thinking and problem solving procedures.

Goal 3/Natural Sciences: The student will be able to:
1. Demonstrate understanding of scientific theories and the ways, in which scientists develop, express and question theories in the areas of the earth sciences.
2. Formulate and test hypothesis by performing laboratory experiments, requiring collection of data, its statistical and/or graphical analysis and an appreciation of uncertainty and sources of error.
3. Communicate their findings, analysis and interpretations with other students and/or instructor orally and in writing.
E. LEARNING OUTCOMES (MNTC): Continued...

Goal 10/People and the Environment: The student will be able to:
1. Discern patterns and interrelationships of geo-physical and socio-cultural systems.
2. Evaluate critically environmental and natural resource issues in light of understandings about interrelationships, ecosystems and institutions.
3. Propose and assess alternative solutions to environmental problems.
4. Articulate and defend the actions they would take on various environmental issues.

F. METHODS FOR EVALUATION OF STUDENT LEARNING:

Methods may include:
1. Laboratory exercises
2. Written exams
3. Writing assignments
4. Homework assignments
5. Quizzes
6. Additionally students will be assessed using the Geoscience Concept Inventory or similar assessment tool.

G. RCTC CORE OUTCOME(S) ADDRESSED:

[ ] Communication [ ] Civic Responsibility
[ ] Critical Thinking [ ] Personal/Professional Accountability
[ ] Global Awareness/Diversity [ ] Aesthetic Response

H. SPECIAL INFORMATION (if any):

The initial lab session explains and familiarizes the student with general safety hazards and safety equipment in the lab. During the pre-lab discussion, the hazardous characteristics of the chemicals used during the lab are discussed. The students will be instructed on the proper disposal of any hazardous products. The instructor insures that all students wear necessary protective equipment while working with the chemicals. A copy of Material Safety Data Sheets for each chemical used is available in the lab.