



EFFECTIVE: JANUARY 2004

CURRICULUM GUIDELINES

A. Division: Science and Technology **Effective Date:** January 2004

B. Department / Program Area: Geology **Revision:** New Course

If Revision, Section(s) Revised: D,F,H,M,N,P,Q

Date of Previous Revision: September 1993

Date of Current Revision: October 3, 2003.

C: GEOL 200 **D: Natural Disasters** **E: 4.0**

Subject & Course No.	Descriptive Title	Semester Credits
F:	<p>Calendar Description:</p> <p>Calendar Description: This course examines a variety of natural disasters such as: landslides, floods, volcanic eruptions and meteor impacts. The course will consider the origin, geomorphology, prediction and mediation of these dangerous events. Participation in field trips will be required.</p>	
G:	<p>Allocation of Contact Hours to Type of Instruction / Learning Settings</p> <p>Primary Methods of Instructional Delivery and/or Learning Settings:</p> <p>Lecture, Lab, Field Trip.</p> <p>Number of Contact Hours: (per week / semester for each descriptor)</p> <p>Lecture: 2 hours/week Laboratory/Field Trip: 4 hours per week.</p> <p>Number of Weeks per Semester: 15</p>	<p>H: Course Prerequisites: None.</p>
	<p>I: Course Corequisites: None.</p>	
	<p>J: Course for which this Course is a Prerequisite None.</p>	
	<p>K: Maximum Class Size: 35</p>	
L:	<p>PLEASE INDICATE:</p> <p><input type="checkbox"/> Non-Credit</p> <p><input type="checkbox"/> College Credit Non-Transfer</p> <p><input checked="" type="checkbox"/> College Credit Transfer:</p> <p>SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bccat.bc.ca) U.B.C. EOSC 114 (3+1 credits)</p>	

M: Course Objectives / Learning Outcomes

Upon completion of this course the student will:

1. Appreciate the role that geological sciences play in the search for solutions to environmental problems.
2. Understand the relationship between natural processes, human activities and environmental hazards.
3. Understand the origins of several types of natural disasters and the approaches used in mitigating these hazards and planning for them.
4. Be able to describe the geomorphological and geological context and characteristics of several types of natural disasters.
5. Be able to identify a variety of landforms produced by a number of geomorphic processes and show an understanding of how these landforms are created.
6. Be able to describe the geological problems and possible solutions that are associated with toxic and hazardous wastes.
7. Understand the importance of natural hazards assessment in land use planning.
8. Understand the importance of natural resources and the environmental impact of their use.
9. Demonstrate an ability to evaluate natural hazards through the use of topographic maps and observation.
10. Demonstrate an understanding of the concepts described above at scales from global to local.

N: Course Content:

A. LECTURE TOPICS MAY INCLUDE:

1. Introduction: Philosophy and Fundamental Principles; perception of risks.
2. Earth Materials - a review: minerals, rocks, soil, rock-forming processes, the rock cycle.
3. Plate Tectonics - an overview: global tectonics, megageomorphology, structure of the earth, isostasy, eustasy.
4. Earthquakes and Tsunamis: occurrence, prediction, mitigation.
5. Volcanic Activity: occurrence, prediction, mitigation.
6. Mass Wasting and Slope stability: gravity, mechanics, role of climate, water, vegetation, role of human activity, prediction and mitigation.
7. River Flooding: drainage basins, watersheds, flood plains, fluvial processes and mechanics, sediment transport, forestry practices, prediction and mitigation.
8. Coastal Hazards: shoreline processes, coastal erosion, mitigation, prediction.
9. Water: water supply and management, water pollution (surface and groundwater), acid mine drainage.
10. Environmental geoscience: solid, toxic and radioactive waste disposal; ocean dumping; environmental law and regulation; acid rain, air pollution and ozone depletion; environmental impact assessment.
11. Mass Extinctions and Impact Events: comets and asteroids; extinctions in Earth history.
12. Geology and Land Use Planning: site selection and evaluation.
13. Severe Weather: hurricanes, storm surges, tornadoes, drought.
14. Global Change: greenhouse effect and warming, glacial cycles, sea level change.

B. LABORATORY/FIELD TRIP TOPICS MAY INCLUDE:

1. Rocks and minerals - an overview.
2. Rocks and minerals in the field.
3. Topographic map interpretation.
4. Air photo interpretation.
5. Seismic hazard.
6. Volcanic landform/hazard.
7. Debris torrent, mass wasting.
8. River discharge and flooding.
9. Groundwater contamination.
10. Coastal landforms - engineering problems.
11. Land use - site selection/evaluation.

O: Methods of Instruction
Instruction will utilize lectures, laboratories and field trips. Text and other readings will be assigned, videos of case histories may be shown, and guest lectures may be given.

P: Textbooks and Materials to be Purchased by Students
Abbott, P.L., Natural Disasters; McGraw Hill; latest edition.
Clague, J., Turner, B.; Vancouver, City On the Edge, latest edition, Tricouni Press, Vancouver.
Waterproof field notebook.

Q: Means of Assessment
Course Evaluation:

This course evaluation will consist of:

1.	Midterm examination	25 - 30%
2.	Term projects/Field trip reports/lab reports/ presentations	35 - 40%
3.	Participation	5%
4.	Final Examination	<u>30%</u>
	TOTAL	100%

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR
Not applicable.

Course Designer(s) Dave Waddington , Michael Wilson.

Education Council / Curriculum Committee Representative

Dean / Director

Registrar