

Master Course Syllabus
Department of Chemistry and Geosciences

Natural Disasters (GEOL 1084)

Catalog Description: **Natural Disasters.** (3-2) Course focuses on the causes, effects, and mitigation of natural disasters around the world. Topics covered will include: plate tectonics; earthquakes, volcanoes and their products, tsunami, landslides, meteor impacts, and major weather events such as tornadoes, floods, and hurricanes. Emphasis will be on methods used by scientists to monitor and study these natural phenomena, as well as the economic and societal impact of and response to the events. Core lab science credit will not be awarded for both GEOL 1054 and GEOL 1084. Lab fee: \$10; Course fee: \$15.

Prerequisites: None

Expanded Course Description: This is designed to be a first or second course in the geosciences, and is intended for freshman-level students from all disciplines. Students may take this course to fulfill half of the university's "Lab Science" core requirement. The course provides a brief introduction to the earth's structure, and the processes that occur inside the earth and at the earth's surface, several types of natural hazards, case studies of populations effected by natural disasters, the possible ways in which hazards may be mitigated, and the response of local public officials, members of society, and the global community to catastrophic events. Topics covered in the course will include: structure of the earth, energy sources that affect processes that occur on the planet, plate tectonics, hazard versus risk, global distribution of geologic hazards and populations at risk, volcanoes, earthquakes, tsunamis, subsidence, landslides, severe weather events, meteor impacts, disaster mitigation, past responses to natural disasters, and planning for future disasters.

Intended Knowledge, Skill, and Value Outcomes: Students who successfully complete this course will be able to:

- Understand plate tectonics and its relation to geologic hazards.
- Describe the factors that control weather and the most likely locations for specific types of weather events.
- Identify natural hazards associated with a variety of geologic settings.
- Recognize the root causes of natural disasters.
- Appreciate that nature cannot be controlled by man, that man must learn to live with nature.
- Understand the far-reaching economic and societal impacts of major natural disasters.

- Understand what can be done to minimize effects of geologic and meteorological events.
- Appreciate the complexity of the earth's natural systems and human interactions with these systems.
- Recognize the importance of geology in our everyday lives.
- Recognize and name volcanic products.
- Scientifically characterize earthquakes, volcanic eruptions, and weather events when given specific measured parameters.
- Read topographic and geologic maps to recognize landscape characteristics and potential hazards in these areas.
- Develop simple mitigation plans for natural hazards.

Course Requirements: The course grade is determined by a combination of the following elements, subject to the instructor's discretion: 3-5 non-comprehensive lecture exams, a comprehensive final exam, quizzes, field trips, and the laboratory grade (consisting, subject to the instructor's discretion, of weekly laboratory exercises and/or quizzes, field activities, lab project, and laboratory exams).

Department Head Signature/Date:

Signature

Date