

Effective Date: Fall 2007

Course Description:

Geologic and other natural disasters that affect mankind and the planet. Topics will include, but are not limited to, earthquakes, volcanic eruptions, hurricanes and other storms, tsunamis, landslides, asteroid impacts, climate change, flooding, and fire.

Rationale:

The course is one appropriate for students at LSUA because of its breadth of information and general interest. It provides an introductory overview of geologic hazards and other natural disasters. Students who successfully complete this course will have a basic understanding of various hazards on earth, how to assess the differences between science and pseudoscience, and when and where to be aware of possible disasters. Students who successfully complete this course will understand basic geologic and earth-science processes that culminate in natural disasters. Topics such as earthquakes, volcanic eruptions, hurricanes and other storms, tsunamis, landslides, asteroid impacts, climate change, flooding, and fire will be introduced.

Course Objectives

Students will:

1. Understand the forces and processes that produce natural disasters.
2. Understand the inter-relationships of processes, forces and events that affect the Earth.
3. Understand how to evaluate potential natural disasters and establish reasonable assessments of potential and post-disaster damage.
4. Learn various means of preventing or mitigating damage resulting from natural disasters.

Procedures to Evaluate these Objectives

1. In-class problems after concept presentation
2. In-class exams
3. Cumulative final exam

Use of Results of Evaluation to Improve the Course

1. Student responses from in-class problems will be used to provide immediate feedback to students on concept misunderstanding.
2. In-class exams will be graded and returned with written evaluations to provide improved understanding of student difficulties in understanding.
3. The cumulative final exam will be graded and examined to determine areas of teaching which could use improvement.

4. All evaluation methods will be constantly monitored to determine if there is a more effective method of presenting the material.

Detailed Topical Outline

1. Introduction to Natural Disasters, Economic and Human Loss
2. Volcanoes and destructive volcanic activity: causes
3. Historical disastrous volcanic eruptions
4. Natural disasters related to volcanoes
5. Evaluating potential eruptions and avoiding loss of life
6. Earthquakes: causes, plate tectonics
7. Historical earthquakes and destruction
8. Implementing mitigative strategies in earthquake-prone areas
9. Tsunamis
10. Mass movements: slope failure, landslides, snow avalanches
11. Slow subsidence: karst topography, sink holes
12. Climate change: El Niño, drought, desertification
13. Severe storms: cyclones, thunderstorms, tornadoes, blizzards
14. Hurricanes and coastlines
15. Reducing hurricane damage
16. Flooding: flash floods, regional floods
17. Fire: Fire weather, fire suppression
18. Mass Extinctions over geological time
19. Impacts with objects from space: meteorites, asteroids