

COCONINO COMMUNITY COLLEGE

COURSE OUTLINE

Prepared by: Peter Koehler
Revised: Kevin Mullins
Status: Permanent

Date: March 24, 2005
Date: Feb. 21, 2009
Spring, 2009

A. Identification

1. Subject Area: Geology
2. Course Number: GLG 110
3. Course Title: Natural Disasters
4. Credit Hrs: 4
5. Catalog Description:

Examine the forces behind the geologic, atmospheric, and climatic processes that have caused great loss of life and property throughout history as a result of natural disasters with a focus on causation, prediction, preparation, and mitigation. **General Education: Physical and Biological Sciences.** Three lecture. Three lab.

B. Course Goals:

To give students a greater understanding of how, where, and why planetary processes have influenced our lives by causing great calamities. How human interaction and the scientific approach is used to identify potential geologic, atmospheric, and climatic natural disasters.

C. Course Outcomes:

Students will:

1. Discuss the theories, principles and concepts of the various types of natural hazards, events disasters and catastrophes.
2. Evaluate the underlying processes and human influences that can lead to natural disasters.
3. Identify, compare and contrast areas or regions susceptible to natural disasters with respect to the physical conditions present that create them.
4. Examine and appraise present and historical evidence of hazards particular to the regions of interest.
5. Examine and interpret the integration or relationships between different types of natural disasters.
6. Compare/contrast present and historical technologies for identifying, tracking, monitoring, measuring and predicting natural hazards.
7. Explain possible mitigation in areas prone to natural disasters.
8. Assess the risks, probabilities and cost/benefits of living in disaster prone areas.
9. Critique systems and policies for assessing, preparation, mitigation and responses for potential local natural disasters.

D. Course Outcomes Assessment:

Assessment will include:

1. Short written and oral presentations on historical events for each major topic
2. Lab quizzes and practicals
3. Term Project – written assessment of potential for local disaster event outlining risks, probabilities, cost/benefits, preparedness, mitigation, and responses.

E. Course Content:

Will include:

1. Volcanism – processes, products and effects
 - a. Igneous geology
 - b. Morphology and landforms
 - c. Tectonics

- d. Critical hazards/history
 - e. Local hazards and potential
 - f. Prediction/mitigation
2. Earthquakes – seismic processes, landforms and effects
- a. Structure and seismic properties
 - b. Tectonics
 - c. Critical hazards/history
 - d. Prediction/mitigation
3. Landslides – processes, products and effects
- a. Weathering and erosion
 - b. Climatic influences
 - c. Structure
 - d. Critical hazards/history
 - e. Prediction/mitigation
4. Weather events – atmospheric, global and local
- a. Hurricanes and tornados
 - b. Atmospheric phenomena and processes
 - c. Floods and tsunami
 - d. Blizzards
 - e. Drought
 - f. Critical hazards/history
 - g. Prediction/mitigation
5. Impact Events – meteorites
- a. Asteroids and comets
 - b. Impact processes
 - c. K-T boundary
 - d. Extinctions
 - e. NEA's and NASA programs
 - f. Prediction/mitigation
6. Karst systems, groundwater and subsidence
- a. Dissolution processes
 - b. Caverns
 - c. Mining
 - d. Critical hazards/history
 - e. Prediction/mitigation
7. Wildfires
- a. Basic fire processes
 - b. Prevention policies and impacts
 - c. Evolution of vegetation species
 - d. Critical hazards/history
 - e. Local hazards and potential
 - f. Prediction/mitigation
8. Climate change
- a. Planetary evolution
 - b. Atmospheric and geologic processes
 - c. Human contribution
 - d. Influence on other natural hazards
 - e. Critical hazards/history
 - f. Local hazards and potential
 - g. Prediction/mitigation

