



ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: NATURAL SCIENCES & BUSINESS

COURSE: GEL 1005 Natural Disasters

Date: Spring 2022

Credit Hours: 3

Complete all that apply or mark "None" where appropriate:

Prerequisite(s): None

Enrollment by assessment or other measure? Yes No

If yes, please describe:

Corequisite(s): None

Pre- or Corequisite(s): None

Consent of Instructor: Yes No

Delivery Method: **Lecture** **3 Contact Hours** (1 contact = 1 credit hour)
 Seminar **0 Contact Hours** (1 contact = 1 credit hour)
 Lab **0 Contact Hours** (2-3 contact = 1 credit hour)
 Clinical **0 Contact Hours** (3 contact = 1 credit hour)
 Online
 Blended
 Virtual Class Meeting (VCM)

Offered: **Fall** **Spring** **Summer**

CATALOG DESCRIPTION and IAI NUMBER (if applicable):

This is an introductory course in the study of the interactions between human activities and hazardous natural processes. An overview of modern concepts in geology and other earth sciences is followed by an in-depth examination of natural hazards including the nature of hazards, human impacts on hazardous processes, the impact of hazards on humans, and human responses to hazards. This course provides instruction in applied geology and other earth sciences and scientific reasoning that is useful to all students. IAI Equivalent: P1 908

ACCREDITATION STATEMENTS AND COURSE NOTES:

None

COURSE TOPICS AND CONTENT REQUIREMENTS:

1. Foundations of Natural Hazards
Provides a description of the basic concepts of natural hazards including scientific analysis and weather and surficial geologic processes. Provides information on the basic types of natural hazards. Provides an exploration of how natural hazards are analyzed.
 - A. Introduction to Natural Hazards
 - B. Classification of Natural Hazards
 - C. Components of Natural Hazards

2. Foundations of Risk Assessment
Provides a description of the basic concepts of risk assessment including identifying characteristics of hazardous natural processes, . Provides information on the basic types of natural hazards. Provides an exploration of how natural hazards are analyzed and how risks are assessed and communicated.
 - A. Risk Analysis
 - B. Risk Characterization
 - C. Risk Communication
 - D. Response to Risk

3. Hazardous Earth Processes
Provides a discussion of hazardous earth processes, their causes, the impacts of the processes on humans, the impacts of humans on the processes, the response of humans to the hazards, and the assessment of risk.
 - A. Rivers and Flooding
 - B. Landslides
 - C. Earthquakes
 - D. Volcanoes
 - E. Hurricanes
 - F. Tsunamis
 - G. Severe Thunderstorms and Tornadoes
 - H. Winter Storms
 - I. Other Weather Hazards (Heat Waves, Fog, Droughts)
 - J. Extraterrestrial Object Impacts

4. Natural Hazard Analysis and Planning
Provides a description of the methods used when planning for natural hazards including a discussion of the scientific, economic, and political aspects of planning. Students identify, analyze, evaluate, and discuss natural hazard planning in a specific community.
 - A. Hazard Assessment
 - B. Hazard Communication
 - C. Hazard Planning

INSTRUCTIONAL METHODS:

1. Lectures (videos with slides)

2. Discussions
 - A. Asynchronous, web-based
 - B. May include individual oral presentations on specified topics
3. Audio-visual Aids - videos, podcasts, slides, charts, and maps
4. Supplemental Reading
 - A. Internet sites
 - B. Journals and periodicals
 - C. Newspapers
 - D. Books
 - E. Pamphlets and brochures

EVALUATION OF STUDENT ACHIEVEMENT:

1. Regular attendance and participation in discussion
2. Weekly homework assignment
3. Written papers
 - A. Term projects (2): report on a natural hazard and its impact on a community including history, risk assessment, effects, and response.
 - B. Opportunity for optional (independent) additional research reports

INSTRUCTIONAL MATERIALS:

Textbooks

- *Natural Disasters*. Keller, E.A., and DeVecchio, D.E., (current edition)

Resources

- Links to appropriate internet sites provided in on-line course materials provided on course web site.

LEARNING OUTCOMES AND GOALS:

Institutional Learning Outcomes

- 1) Communication – to communicate effectively;
- 2) Inquiry – to apply critical, logical, creative, aesthetic, or quantitative analytical reasoning to formulate a judgement or conclusion;
- 3) Social Consciousness – to understand what it means to be a socially conscious person, locally and globally;
- 4) Responsibility – to recognize how personal choices affect self and society.

Course Outcomes and Competencies

1. Understand how science works and the characteristics of natural hazards.
 - Competency 1.1: Identify the methodology of science.
 - Competency 1.2: Critically evaluate datasets and infer valid conclusions from those datasets.
 - Competency 1.3: Identify the basic concepts of geology and other earth sciences as a method for the scientific study of the natural hazards.
 - Competency 1.4: Recognize the study of natural hazards as an application of the geology and other earth sciences to the interactions between humans and hazardous Earth processes.
 - Competency 1.5: Recognize important characteristics of natural hazards and analyze and evaluate those characteristics to identify those that are the most important for risk assessment and hazard forecast and prediction.

2. Understand risk assessment as it is applied to natural hazards
 - Competency 2.1: Identify the methodology of risk assessment.
 - Competency 2.2: Identify the components of a natural hazard and analyze and evaluate the components to identify those that contribute to risk and determine their relative importance.
 - Competency 2.3: Identify the human components of risk and analyze and evaluate the components to determine their relative importance.
 - Competency 2.4: Identify the components of risk communication and analyze and evaluate risk communication documents.
3. Understand hazardous geologic processes and the interactions between humans and those processes.
 - Competency 3.1: Identify, analyze, and evaluate the hazards presented by rivers, the natural and human causes of those hazards, and the human responses to those hazards.
 - Competency 3.2: Identify, analyze, and evaluate the hazards posed by unstable slopes, the natural and human contributions to those hazards, and the human responses to those hazards.
 - Competency 3.3: Identify, analyze, and evaluate the hazards posed by earthquakes, the natural causes of those hazards, and the human responses to those hazards.
 - Competency 3.4: Identify, analyze, and evaluate the hazards posed by volcanoes, the natural causes of those hazards, and the human responses to those hazards.
 - Competency 3.5: Identify, analyze, and evaluate the hazards found in coastal areas, the natural and human contributions to those hazards, and the human responses to those hazards.
 - Competency 3.6: Identify, analyze, and evaluate the hazards found in weather, the natural and human contributions to those hazards, and the human responses to those hazards.
 - Competency 3.7: Identify, analyze, and evaluate the hazards posed by extra-terrestrial objects and the human responses to those hazards.
 - Competency 3.8: Identify, analyze, and evaluate the hazards to identify interactions between hazardous processes.
4. Understand the resources available for the study of natural hazards.
 - Competency 4.1: Identify the features common to all maps, and use maps to identify human and.
 - Competency 4.2: Identify public information resources useful in natural hazards research.
 - Competency 4.3: Identify publications useful in natural hazards research and use those publications to identify natural hazards.
5. Express insight and judgment with regard to future options that may lessen the impact of natural hazards.
 - Competency 5.1: Discuss their personal relationship with natural hazards and value judgments they make of their actions.
 - Competency 5.2: Describe and evaluate the processes by which humans can address natural hazards, including politically.

Competency 5.3: Examine a designated area and identify, analyze, and evaluate potential natural hazards.

Competency 5.4: Examine a designated area and identify, analyze, and evaluate how potential natural hazards are being addressed and how they should be addressed.