

Course Objectives/Course Outline
Spokane Community College

Course Title: Environmental Geology
Prefix and Course Number: GEOL 116

Course Learning Outcomes:

By the end of this course, a student should be able to:

-

Course Outline

- I. Course Information Overview
 - A. Basic understanding of Earth's physical properties.
 - B. Integrated understanding of various systems and their interconnectedness with the geosphere, biosphere, atmosphere, and hydrosphere.
- II. General Course Orientation
 - A. Overview of class, including grading format, assignment responsibilities, scientific method, scientific validity, introduction to case studies, and recommendations for overall success in the course.
 - B. Explanation of class etiquette and student conduct, course goals, student expectations, course schedule, and supplemental resources.
- III. Learning/Performance Expectations:
 - A. Identify common rock types.
 - B. Recognize common rock forming processes.
 - C. Recognize common landforms and land-forming processes.
 - D. Integrate introductory geologic knowledge with environmentally related practices.
- IV. Detailed Course Outline

Scheduled Themes for Lecture - students will generally be able to explain scientific principles and state relevant facts pertaining to a selection from the following topics:

 - A. **Foundations of Environmental Geology** – Philosophy and Fundamental concepts:
 1. Introduction to environmental geology
 2. Fundamental concepts of environmental geology
 - B. **Foundations of Environmental Geology** – Internal Structure of Earth and Plate Tectonics:
 1. Internal structure of Earth
 2. Plate tectonics
 3. Plate tectonics and environmental geology
 - C. **Foundations of Environmental Geology** – Minerals and Rocks:
 1. Rock-forming minerals
 2. Rock cycle and individual rock identification
 3. Rock strength, deformation, and structures
 - D. **Foundations of Environmental Geology** – Ecology and Geology:

1. Define ecology
 2. Geology and biodiversity
 3. Ecological restoration
- E. **Earth Processes and Natural Hazards** – Introduction to Natural Hazards:
1. Hazards, disasters, and natural processes
 2. Human response to hazards
 3. Global climate and hazards
- F. **Earth Processes and Natural Hazards** – Earthquakes and Related Phenomena:
1. Introduction to earthquakes, occurrence, hazard, mitigation, and effects
 2. Tsunami
 3. Response to earthquake hazards
- G. **Earth Processes and Natural Hazards** – Volcanic Activity:
1. Introduction to volcanoes, occurrence, hazard, mitigation, and effects.
 2. Forecasting volcanic behavior
 3. Adjustment to and perception of volcanic hazard
- H. **Earth Processes and Natural Hazards** – Rivers and Flooding:
1. Historical use of rivers
 2. Sedimentation, velocity, discharge, erosion, and deposition.
 3. Effects of land-use changes and urbanization
 4. The nature and extent of flood hazards
- I. **Earth Processes and Natural Hazards** – Slope Processes, Landslides, and subsidence:
1. Introduction to landslides, processes, and types
 2. Human use and landslides
 3. Minimizing the landslide hazard
 4. Subsidence
- J. **Earth Processes and Natural Hazards** – Coastal Processes:
1. Introduction to coastal hazards, processes, and erosion
 2. Human activity and coastal erosion
 3. Tropical cyclones
 4. Perception of and adjustment to coastal hazards
- K. **Resources and Pollution** – Water Resources:
1. A global perspective
 2. Surface water and groundwater
 3. Desalination
 4. Water use and management
 5. Emerging global water shortages
- L. **Resources and Pollution** – Water Pollution:
1. Overview of water pollutants; surface and ground
 2. Water quality standards
 3. Wastewater treatment
 4. Reducing the effects of water pollution

- M. **Resources and Pollution – Mineral Resources:**
 - 1. Minerals and human use
 - 2. Geology of mineral resources
 - 3. Recycling mineral resources
 - 4. Minerals and sustainability
- N. **Resources and Pollution – Energy Resources:**
 - 1. Energy supply and demand
 - 2. Fossil fuels
 - 3. Nuclear and geothermal energy
 - 4. Renewable energy resources, conservation, efficiency, and cogeneration
- O. **Resources and Pollution – Soils and Environment (time permitting):**
 - 1. Introduction to soil; profiles, properties, fertility, and water content
 - 2. Rates of erosion
 - 3. Soil pollution
 - 4. Land use and environmental problems of soils
- P. **Resources and Pollution – Waste as a Resource...Waste Management:**
 - 1. Concepts of waste management
 - 2. Materials management
 - 3. Solid and hazardous waste disposal
- Q. **Resources and Pollution – Air Pollution (time permitting):**
 - 1. Introduction to air pollution
 - 2. Sources of air pollution
 - 3. Air pollutants
 - 4. Control of air pollution and quality standards
- R. **Environmental Management, Global Perspective, and Society – Global Climate Change:**
 - 1. Global change and Earth system science
 - 2. Tools for studying global climate change
 - 3. Potential effects of global climate change
- S. **Environmental Management, Global Perspective, and Society – Geology, Society, and the Future:**
 - 1. Geology and environmental health
 - 2. Environmental impact analysis
 - 3. Land use planning
 - 4. Environmental law
- V. **Student Grading Opportunities**
 - A. Analysis of weekly case studies
 - B. Report Presentation – written poster or oral
 - C. Daily in-class assignments
 - D. Quizzes and exams