NorthWest Arkansas Community College
Division of Science & Mathematics

GEOL 1134 Environmental Geology

Catalog Description: The application of geological principles to problems created by human exploitation of the environment. Laboratory exercises concerning interaction of human populations with flooding, groundwater movement and contamination, erosion, earthquakes, waste disposal and landfills. GIS (Geographic Information Science) is used to facilitate student learning of most curriculum topics.

Prerequisite: none

Credit hours/ Contact hours/ Load hours: 4/ 6/ 5

Target Audience/ Transferability: This course is suitable for both science and non science majors. It meets the general education requirements for a physical science (with lab) for many baccalaureate programs. Students should check with their transfer institutions to confirm how this course would be counted as part of their specific degree plan.

Student Learning Outcomes:
Upon completion of this course students will:

- Gain understanding into how the scientific method is applied to environmental issues
- Possess a foundation in environmental geology prerequisite for higher level courses
- Relate geological principles to environmental issues
- Be aware of the effects of natural hazards such as volcanoes, landslides, earthquakes, and floods on humans and the environment.
- Describe the geologic factors affecting the use, supply, contamination, and treatment of surface and groundwater resources
- Identify the geological aspects of waste management and disposal
- Discuss issues surrounding several environmental case studies
- Recognize the relationships between humans and the environment, particularly the effects of population growth on natural systems.
- Be familiar with earth systems concepts relating to global change such as greenhouse gases and ozone balance.
- Demonstrate the ability to utilize Global Positioning Systems and GIS technology

Required Text:

- Pipkin et. al., Geology and the Environment, 5th Edition, 2008, Cengage Learning
- Hall et al., Exploring Water Resources GIS Investigations for the Earth Sciences Lab Manual, 2nd Edition, 2007, Cengage Learning

Topics:

Concept	Chapter
Humans, Geology, and the Environment	1
Getting around in Geology	2
Plate Tectonics	3
Earthquakes and Human Activities	4

- Volcanoes 5
- Soils, Weathering, and Erosion 6
- Mass Wasting and Subsidence 7
- Fresh Water Resources 8
- Hydrologic Hazards at the Earth's Surface 9
- Coastal Environments and Humans 10
- Glaciation and Long-Term Climate Change 11
- Arid Lands and Desertification 12
- Mineral Resources and Society 13
- Energy and the Environment 14
- Waste Management and Geology 15

Required Methods of Instruction:
Laboratory will include the following activities:

- Rocks & Minerals
- Remote Sensing
- Geological Maps
- Volcanic Hazard
- Earthquake damage assessment
- Landslide hazard assessment
- Flooding
- Groundwater models
- Groundwater surface interactions & contamination
- GIS exercises in most of the above topics
- Field trip to water treatment plant & landfill strongly encouraged

Forms of Assessment:
Lab exams should be part of grading