

**Effective Date:** Fall 2007

**Course Description:**

Prerequisite: A grade of "C" or better in GEOL 1001 or consent of the department. Natural resources and environmental effects resulting from the development and use of those resources. Resources include water, soil, air, mineral, rock, fossil fuel, as well as alternative resources (nuclear, solar, geothermal, hydropower, tidal power, wind energy). Environmental effects include those from mining and energy development and production, agricultural and industrial pollution, as well as other waste disposal.

**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 natural resources and environmental effects of using those resources. Students who successfully complete this course will have a basic understanding of resources and their limits, various types of pollution, as well as assessment and mitigation of environmental problems resulting from pollution.

**Course Objectives**

Students will:

1. Become knowledgeable regarding various natural resources and their limitations.
2. Understand methods of mining, production, and manufacturing, and potential pollutants.
3. Understand how pollutants enter ground water, streams, oceans, air, and soils.
4. Learn methods of assessing, mitigating, and preventing damage resulting from pollutants.

**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. Water as a Resource
  - a. aquifers, ground water
  - b. measuring water quality
  - c. water use and conservation
2. Soil as a Resource
  - a. soil-forming processes
  - b. soil erosion
  - c. strategies for reducing soil erosion
3. Mineral and Rock Resources
  - a. ore deposits
  - b. mineral and rock resources—types
  - c. mineral supply and demand
4. Energy Resources—Fossil Fuels
  - a. oil and natural gas supply and demand
  - b. coal, oil shale, tar sand
5. Alternative Energy Resources
  - a. nuclear power
  - b. solar power
  - c. geothermal power
  - d. hydropower
  - e. tidal power
  - f. wind energy
6. Waste Disposal and Treatment
  - a. municipal waste disposal
  - b. liquid-waste disposal
  - c. sewage treatment
  - d. toxic waste dumps
  - e. radioactive waste
7. Water Pollution
  - a. geochemical cycles and residence times
  - b. organic matter
  - c. industrial pollution
  - d. agricultural pollution
  - e. groundwater pollution
  - f. treatment, decontamination
8. Air Pollution
  - a. atmospheric chemistry
  - b. types of air pollution
  - c. acid rain
  - d. air pollution control
9. Soil Pollution
10. Environmental Law

