



Online Courses for High School Students
1-888-972-6237

Environmental Science

Course Description:

This course surveys key topic areas, including the application of scientific process to environmental analysis; ecology; energy flow; ecological structures; earth systems; and atmospheric, land, and water science. Topics also include the management of natural resources and analysis of private and governmental decisions involving the environment. Students explore actual case studies and conduct five hands-on, unit-long research activities, learning that political and private decisions about the environment and the use of resources require accurate application of scientific processes, including proper data collection and responsible conclusions.

Prerequisite: Success in previous high school science course and teacher/school counselor recommendation.

Course Length: One Semester

Required Text: None

Course Outline:

Unit 1: Science of the Environment

Students discover how scientific processes are applied in various scenarios involving the environment. Questioning, hypothesizing, experimenting, analyzing data, concluding, and communicating are processes that must be carried out accurately if data about the environment is to be valid. Students will conduct a laboratory, applying scientific processes to a focused study. Case studies, an important part of this course, keep students focused on real issues involving ecology, geological systems, and environmental science.

- Introduction to Environmental Science
- Case Study: Easter Island
- Case Study: Water and Empires
- Environment and Society
- Science of Environmental Science
- Earth as an Environmental System
- Scientific Processes and Decision Making
- Questioning and Hypothesizing
- Collecting Environment Data

- Field Study: Remote Sensing
- Analyzing Data
- Using the Metric System Effectively
- Communicating

Unit 2: Fundamentals of Ecology

Students survey the basics of the science of ecology including the organization of Earth’s “spheres” and the structure of ecosystems. Students learn how energy enters and flows through ecosystems and how this interacts with various biogeochemical cycles. Students become familiar with three case studies involving systems and engage in a field study in the description of ecosystems. Students learn how good science and accurate data are fundamental to making decisions about the health of ecosystems.

- Earth Systems and Lithosphere
- Atmosphere
- Hydrosphere and Biosphere
- Case Study: Hurricane!
- Individuals and Populations
- Ecosystems and Biomes
- Field Study: Ecosystems
- Energy Flow in Ecosystems
- Nutrient Cycling in Ecosystems
- Case Study: How Ecosystems Change
- Case Study: Population Growth
- Principles of Population Growth

Unit 3: Resources

Students learn about renewable, nonrenewable, and perennial resources through case studies. They examine soil, water, timber, and mineral resource issues and conduct a field study on water resources. They study fossil fuels as the basis for understanding issues of global climate and pollution.

- Classification of Resources
- Case Study: Soil
- Soil as a Resource
- Case Study: Water
- Water as a Resource
- Field Study: Water Resources
- Case Study: Timber
- Timber as a Resource

- Case Study: Fish
- Food as a Resource
- Fossil Fuels: Types
- Fossil Fuels: Current Issues

Unit 4: Environmental Concerns

Through case studies, students explore some modern issues involving the environment, examining issues in pollution, waste, biodiversity, extinction, and the global climate. The unit also focuses on new technologies that lessen dangers to the environment.

- Modern Environmental Concerns
- Case Study: Air Pollution
- Air Pollution: Science and Solutions
- Case Study: Acid Rain
- Acid Rain: Science and Solutions
- Hazardous and Solid Waste: Science and Solutions
- Field Study: Pollution
- Case Study: Biodiversity and Extinction
- Biodiversity and Extinction
- Global Climate Concerns

Unit 5: Politics, Laws, and the Environment

Students review the structure of government and the process of passing laws. They examine four major laws in the United States currently affecting the health of the environment and the current state of politics regarding the global environment.

- Field Study: Environmental Legislation
- Government and the Environment
- Case Study: Passing an Environmental Law
- Clean Air Legislation
- Clean Water Legislation
- Other Types of Environmental Legislation

Unit 6: Semester Review and Test

- Students review what they have learned and take the semester test.