

| Options EHS Environmental Science A | | Scope and Sequence |
|---|--------|---|
| Unit | Lesson | Objectives |
| The Land | | |
| Skills Lesson: Plotting Trends and Patterns | | |
| | | Record observations of an event or process. |
| | | Categorize recorded observations based on similarities and differences. |
| | | Interpret trends and patterns within the recorded data. |
| Life and Earth's Crust | | |
| | | Describe the composition of each layer of the Earth. |
| | | Explain the structure and function of the Earth's crust. |
| | | Evaluate the interdependence of Earth's crust and its organisms. |
| | | Skills used: create graph, map, chart |
| Plate Tectonics | | |
| | | Explain the theory of plate tectonics. |
| | | Relate the movement of the continents to changes in weather patterns. |
| | | Describe the impact of continental shifting on local environments. |
| | | Skills used: create graph, map, chart |
| Weathering and Erosion | | |
| | | Compare and contrast weathering and erosion. |
| | | Distinguish between chemical and physical weathering. |
| | | Describe the effects of natural erosion on the environment. |
| | | Explain the impact of artificial erosion on the environment. |
| | | Skills used: create graph, map, chart |
| Human Use of Land | | |

Options EHS Environmental Science A**Scope and Sequence****Unit Lesson****Objectives**

Assess the effects of human land usage on ecosystems.

Compare and contrast ways humans are working to reduce the impact of land use on the environment.

Describe possible future consequences of land use to the environment.

Skills used: determine the cause and predict the effect

Minerals and Mining

Identify uses of minerals.

Compare and contrast various mineral extraction methods.

Explain the impact of mining on local populations.

Describe the long-term consequences of large scale mineral extraction to the Earth.

Skills used: determine the cause and predict the effect

Urban Growth

Compare and contrast various urban and suburban migration patterns seen on the Earth.

Describe the effects of upward growth on local environments.

Describe the effects of urban sprawl on local environments.

Skills used: determine the cause and predict the effect

Land Management and Planning

Describe differences in the use of public land and private land.

Describe large-scale land management methods implemented by governments and corporations.

Determine possible impacts of land management methods on the environment.

Skills used: determine the cause and predict the effect

Test**Vanishing Forests**

Unit Lesson**Objectives**

Skills Lesson: Constructing Valid Criticisms

Identify factors contributing to the possible outcome of a process.

Research data relating to the contributing factors.

Analyze data to determine reliability and bias.

Construct a valid criticism of the possible outcome based on the data.

The Importance of Trees

Explain the impact of trees on air quality.

Identify methods in which trees are utilized by humans.

Describe the relationship between trees and other organisms.

Analyze the consequences of human use of trees.

Skills used: constructing valid criticism

Rainforest Loss

Identify the locations of the world's rainforests.

Explain how rainforest resources are utilized throughout the globe.

Evaluate the impact of rainforest loss over the last 100 years.

Compare and contrast the effectiveness of current rainforest conservation efforts.

Skills used: constructing valid criticism

Modern Forestry

Describe the main roles of a forester.

Compare and contrast current methods of forest management.

Analyze the role of forests as carbon sinks.

Skills used: constructing valid criticism

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| | Fire and Nature | |
| | | Evaluate ways that wildfire benefits ecosystems. |
| | | Analyze methods of fire utilization within various environments. |
| | | Predict how fire can be used to further benefit the environment. |
| | | Skills used: constructing valid criticism |
| | Topic Test | |
| | Soil | |
| | What is Soil? | |
| | | Describe the composition of soil. |
| | | Characterize the major horizons in soil. |
| | | Compare processes of soil formation in various environments. |
| | | Skills used: selecting valid resources |
| | Soil Formation | |
| | | Identify the properties of soil. |
| | | Explain the relationship between microorganisms, humus, and soil health. |
| | | Assess the role of microorganisms in soil. |
| | | Skills used: selecting valid resources |
| | Soil Around the World | |
| | | Explain the relationships between organisms and soil of different ecosystems. |
| | | Compare and contrast the soil composition of different ecosystems. |
| | | Describe ways in which humans impact soil. |
| | Soil and Agriculture | |

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| Unit | Lesson | Objectives |
| | | Compare and contrast various agricultural practices around the world. |
| | | Evaluate various methods used in agriculture to minimize soil depletion and erosion. |
| | | Skills used: selecting valid resources |
| | Global Connection: Microflora and Microfauna | |
| | | Evaluate how agricultural practices affect microflora and microfauna. |
| | Topic Test | |
| Marine Ecosystems | | |
| | Skills Lesson: Proposing Solutions | |
| | | Identify an unresolved problem or dilemma. |
| | | Determine the desired outcome of the identified problem. |
| | | Propose a possible solution. |
| | Ocean Exploration | |
| | | Explore the relationship between technology and new developments in oceanography. |
| | | Discuss possible applications of recent discoveries within the ocean. |
| | | Examine how recent discoveries in abyssal zones have impacted scientific theories. |
| | Salt Marshes and Mangroves | |
| | | Identify characteristics of salt marsh and mangrove habitats. |
| | | Explain how utilization of mangrove and salt marshes has changed over time. |
| | | Propose alternative ways to utilize resources in mangroves and salt marshes. |
| | | Skills used: forming a valid hypothesis |
| | Coral Reefs | |
| | | Describe the characteristics of a coral reef. |

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Explain the relationship between aquatic organisms and the coral reef.

Examine causes of coral reef loss.

Analyze the effectiveness of current efforts to preserve coral reefs.

Skills used: forming a valid hypothesis

Issues Affecting Marine Ecosystems

Identify the impacts of floating refuse on marine ecosystems.

Describe how fisheries and ocean bottom trawling impact marine ecosystems.

Evaluate methods humans are using to reduce their impact on marine ecosystems.

Topic Test**Freshwater Ecosystems****Pools, Ponds, and Lakes**

Compare and contrast the characteristics of pools, ponds, and lakes.

Differentiate littoral and riparian areas.

Describe the cause of eutrophication and its effects on the environment.

Assess the relationships between organisms that live in pools, ponds, and lakes.

Streams and Rivers

Compare and contrast the characteristics of streams and rivers.

Describe the impact of current and oxygen content on biodiversity in streams and rivers.

Explain various ways humans impact rivers and streams.

Assess the relationships between organisms that live in streams and rivers.

Wetlands

Differentiate various types of wetlands.

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| | | Distinguish between the main types of water found in wetlands. |
| | | Assess the biodiversity of organisms found in wetlands. |
| | | Explain how the wetlands filter and clean water. |
| | Virginia's Watershed Systems | Identify major watershed systems in Virginia. |
| | | Identify major conservation, health, and safety issues associated with watersheds. |
| | Global Connection: Water Management and Katrina | Analyze the effect of canals and levees on wetlands. |
| | Topic Test | |
| Cumulative Test Review | | |
| Cumulative Exam | | |