Unit	Topic	Lesson	Objectives
The Scientific Method			
	Scientific Inquiry and Analysis		
		Scientific Inquiry	
			Describe the steps involved in scientific inquiry.
			Differentiate between an observation and an inference.
			Explain the relationship between variables and controls in an experiment.
			Compare and contrast scientific theories and scientific laws.
		Laboratory Tools and Safety	
			Describe the use of various common laboratory tools.
			Differentiate between light, dissecting, and electron microscopes.
			Identify safety equipment found in a science lab.
			Explain the importance of following common lab rules and procedures.
		Scientific Measurement	
			Explain the purpose of utilizing the metric system in scientific measurement.
			Identify the basic SI units utilized in scientific measurement.
			Calculate values utilizing the metric conversion process.
			Describe the use of significant figures and rounding in scientific measurement.
		Scientific Models	
			Explain the purpose of scientific models.
			Identify limitations of scientific models.
			Describe three types of scientific models.
		Critical Thinking in Science	
			Identify components of critical thinking.
			Explain the importance of critical thinking to science.
			Evaluate three everyday uses of critical thinking.
Ecology			
	A History of Environmental Science		
		Skills Lesson: Interpreting Observations	
			Observe an event or process.
			Describe patterns and trends of an observed event or process.
			Interpret observations using trends and patterns.

Unit	Topic	Lesson	Objectives
		The Study of Environmental Science	
			Define the components of environmental science.
			Describe the interdependence of organisms in the environment.
			Discuss human impacts on the Earth.
		Environmental Scientists and Ecologists	
			Summarize the work of famous environmental scientists of the past.
			Examine the contributions of environmental scientists to today's environment.
		Careers in Environmental Science	
			Describe the job of an environmental scientist.
			Explore additional careers in environmental science.
			Discuss possible future careers and fields in environmental science.
	Introduction to Ecology		
		Ecology 101	
			Describe the levels of organization in the biosphere.
			Identify the major biomes found on Earth.
			Compare and contrast major ecosystems found on Earth.
		Ecology 102	
			Identify factors that can cause change within an ecosystem.
			Evaluate the effects of different factors on ecosystem stability.
			Describe changes that can occur within an ecosystem.
		Trophic Levels and Food Webs	
			Explain how relationships between organisms in an ecosystem contribute to energy flow within a food chain.
			Analyze the effects of changes in populations on food web dynamics.
			Differentiate between three types of energy pyramids.
			Analyze relationships between producers, consumers and decomposers in an ecosystem.
		Adaptation	
			Describe the development of the theory of evolution.
			Explain the theory of evolution.
			Relate adaptations of organisms to resource competition.
		Global Connection: Changing Migratory Patterns	
			Explain how migratory patterns change in response to alterations in an ecosystem.

Unit	Topic	Lesson	Objectives
	Habitats		
		Skills Lesson: Contrasting Observations or Objects	
			List characteristics of two or more observable events or objects.
			Organize characteristics on a chart or graph.
			Distinguish differences between the two events or objects.
		Organismal Relationships	
			Describe three types of interactions between organisms in an ecosystem.
			Compare and contrast mutualism, parasitism, and commensalism.
			Explain the effects of competitive exclusion on an ecosystem.
		Biodiversity	
			Analyze the effects of local evolution or migration on an ecosystem.
			Predict the impact of removing or adding organisms on a food chain.
			Explain how changes in biodiversity impact an ecosystem.
		Land Habitats	
			Differentiate between biotic and abiotic factors in various ecosystems.
			Explain the adaptations of indigenous species to their respective ecosystems.
		Aquatic Habitats	
			Compare and contrast the components of marine and freshwater ecosystems.
			Differentiate between terrestrial and aquatic energy pyramids.
	Population Dynamics		
		Population Size	
			Identify biotic and abiotic factors that limit population growth.
			Evaluate the effect of various factors on population size.
			Analyze population patterns within ecosystems.
		Population Genetics	
			Describe the effect of genetics on the growth rate and carrying capacity of a population.
			Evaluate the effects of events on gene flow.
		Determining Population Size	
			Compare and contrast various methods of determining population size.
			Discriminate between major population growth models.
			Compute population density.

Unit	Topic	Lesson	Objectives
		Measuring Populations	
			Compare and contrast various types of population distribution.
			Differentiate between stabilizing, disruptive and directional selection utilizing a graph.
			Illustrate the structure of a given population demographic.
		Global Connection: Human Impact on Population Size	
			Evaluate human impact on wildlife population size.
	Arid and Semi-Arid Biomes		
		Skills Lesson: Making Comparisons	
			Identify like systems or events to be compared and contrasted.
			List characteristics of the compared systems or events.
			Group characteristics by similarities and differences.
			Contrast unlike characteristics of two or more phenomena.
		Characteristics of Biomes	
			Identify the characteristics used to define all biomes.
			Summarize the history of biomes on Earth.
			Describe the impact of humanity on Earth's biomes.
			Compare and contrast artificial and natural changes within a biome.
		Desert and Desert-Scrub Biomes	
			Identify the characteristics of desert and desert-scrub biomes.
			Evaluate ways organisms have adapted to desert and desert-scrub environments.
		The Chaparral	
			Identify the characteristics of chaparral biomes.
			Evaluate ways organisms have adapted to chaparral.
		Alpine and Taiga Biomes	
			Identify the characteristics of the alpine and taiga biomes.
			Evaluate ways organisms have adapted to the alpine and taiga biomes.
		The Tundra	
			Identify the characteristics of the tundra.
	Temperate, Wet, and Aquatic Biomes		
		Savanna and Grassland Biomes	
			Identify the characteristics of the savanna and grassland biomes.
			Evaluate ways organisms have adapted to the savanna and grasslands.

Unit	Topic	Lesson	Objectives
		Deciduous Forests	
			Identify the characteristics of deciduous forests.
			Evaluate ways organisms have adapted to deciduous forests.
		The Rainforest	
			Identify the characteristics of the rainforest.
			Evaluate ways organisms have adapted to the rainforest.
		Freshwater and Marine Biomes	
			Identify characteristics that are unique to each of the aquatic biomes.
			Compare and contrast the adaptations of organisms in the aquatic biomes to their respective environments.
			Describe how humans utilize resources from each of the aquatic biomes.
			Explain how human understanding of aquatic ecosystems has changed throughout history.
		Global Connection: Why Invasive Species Thrive	
			Relate the ability of invasive species to thrive in their new habitat to resource competition.
The Biosphere			
	Earth's Systems		
		Skills Lesson: Modeling Systems and Cycles	
			Identify a system or cycle to be modeled.
			Determine the main parts or processes of the system or cycle.
			Organize the parts or processes sequentially.
			Model the main parts or processes of the system or cycle.
		Systems of the Biosphere	
			Describe Earth's systems in terms of energy, matter, time and space.
			Explain the interactions between Earth's systems.
		Patterns in Systems	
			Describe various patterns found in the Earth system.
			Identify methods of measuring constancy and change in a system.
	Earth's Cycles		
		The Cycles of Matter	
			Describe various cycles of matter that take place on Earth.
			Evaluate the role played by cycles in sustaining life.
			Explain the change in energy that occurs between each cycle in an ecosystem.

Unit	Topic	Lesson	Objectives
		The Water Cycle	
			Describe the steps of the water cycle.
			Explain the relationship between living organisms and the water cycle.
			Identify possible sources of water contamination.
		Effects of Cycles on Ecosystems	
			Explain how fluctuations in abiotic cycles influence populations.
			Describe the movement of carbon compounds through a food web.
			Describe the effects of abiotic cycles on local ecosystems.
		Global Connection: Recycling on Earth	
			Compare human recycling techniques to similar cycles in nature.
	The Air		
		Skills Lesson: Evaluating Explanations	
			Identify a given explanation for an event or process.
			Research data relating to the explanation.
			Categorize researched information as being factual or biased.
			Evaluate the given explanation based on researched data.
		Atmospheric Pollution	
			Overview the composition and function of each layer of the atmosphere.
			Identify various common atmospheric pollutants.
			Differentiate between primary and secondary pollutants.
			Examine the effects of pollution on health.
		Ozone	
			Explain how the ozone layer is formed.
			Analyze the importance of the ozone layer in sustaining life.
			Compare and contrast various factors that cause ozone depletion.
			Relate fluctuations in ozone to human health and the environment.
		Air Quality	
			Identify various causes of air pollution.
			Explain the impact of air pollution on the environment.
			Assess the methods that can be utilized to improve air quality.
			Propose alternative methods of improving air quality.

Unit	Topic	Lesson	Objectives
	Climate		
		Succession	
			Identify various causes of succession in ecosystems.
			Differentiate between primary and secondary succession in ecosystems.
			Explain the importance of succession in maintaining ecosystems.
		Climate and Change in Ecosystems	
			Identify various effects of climate changes on an ecosystem.
			Describe environmental factors that can cause changes in ecosystems.
			Compare and contrast the benefits and disadvantages of natural change to ecosystems.
		Global Change	
			Predict future changes in the global climate.
			Assess current theories regarding global climate change.
			Analyze environment changes and their connection to global warming.
		A History of Global Climate Change	
			Compare current and past global climate trends.
			Explain how long-term global climate shifts impact Earth's ecosystems.
			Describe the effects of greenhouse gases on the atmosphere.
			Analyze various theories related to global warming.
		Global Connection: Algal Blooms	
			Connect the formation of algal blooms to climate change.
The Land			
	Shaping Earth		
		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.
		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.

Unit	Topic	Lesson	Objectives
		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.
	Land Use and Management		
		Human Use of Land	
			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.
		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.
		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.
		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.
		Global Connection: Deforestation in Haiti	
			Assess how deforestation in Haiti impacts the environment.
Forests and Soil			
	Vanishing Forests		
		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.

Unit	Topic	Lesson	Objectives
		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.
		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.
		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.
		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.
	Soil		
		What Is Soil?	
			Describe the composition of soil.
			Characterize the major horizons in soil.
			Compare processes of soil formation in various environments.
		Soil Formation	
			Identify the properties of soil.
			Explain the relationship between microorganisms, humus, and soil health.
			Assess the role of microorganisms in soil.
		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	
			Compare and contrast various agricultural practices around the world.
			Evaluate various methods used in agriculture to minimize soil depletion and erosion.

Unit	Topic	Lesson	Objectives
		Global Connection: Microflora and Microfauna	
			Evaluate how agricultural practices affect microflora and microfauna.
The Water			
	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.
		Coral Reefs	
			Describe the characteristics of a coral reef.
			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.
		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.
	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.

Unit	Topic	Lesson	Objectives
		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.
			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.
		Global Connection: Water Management and Katrina	
			Analyze the effect of canals and levees on wetlands.
	Water Ecology		
		Skills Lesson: Proposing Logical Alternatives	
			Identify an unresolved problem.
			Utilize scientific data and research to establish cause and effect.
			Compare the positive and negative effects of previously enacted resolutions to a problem.
			Propose a logical alternative to an unresolved problem or question.
		Nonnative Species in Aquatic Ecosystems	
			Describe how invasive species impact an aquatic ecosystem.
			Identify ways that invasive species are introduced into an aquatic ecosystem.
			Examine various methods of addressing environmental problems that were traditionally solved by utilizing nonnative species.
		Changing Waterways	
			Describe naturally occurring changes to waterways.
			Evaluate ways humans impact waterways.
			Propose alternative practices to reduce human impact on waterways.
		The Water We Use	
			Identify sources of potable and non-potable water.
			Describe the availability of water across the globe.
			Assess the impact of water consumption and diminishing supplies on human activities.

Unit	Topic	Lesson	Objectives
		Water Pollution	
			Identify sources of water pollution.
			Describe the effects of water pollution on local populations.
			Explain ways that humans can reduce water pollution.
		Groundwater	
			Describe the location and importance of the water table.
			Assess the consequences of overuse and contamination of groundwater.
			Explain how human use of groundwater has changed over time.
		Water Policy	
			Identify laws and regulations in the United States that address water use and management.
			Propose possible consequences of failing to conserve water.
			Compare and contrast the processes of water reclamation, greywater use, and desalination.
Energy and Resources			
	Energy in Ecosystems		
		Energy Transformation	
			Discuss the main forms of energy in an ecosystem.
			Explain how energy is transformed and conserved as it changes from one form to another.
			Describe the impact of energy transformations on ecosystems.
		Energy Transfer	
			Outline the flow of energy in an ecosystem.
			Describe how the amount of available energy changes between trophic levels in a food chain.
			Explain the relationship between entropy and usable energy in a food chain.
		Photosynthesis in Plants	
			Explain the process of photosynthesis in plants.
			Distinguish between the main types of carbon fixation.
		Global Connection: Deep Sea Ecologies	
			Explain the process of energy transfer in deep sea ecologies.
	Resources		
		Skills Lesson: Conducting Valid Internet Research	
			Identify a topic to be researched.
			Utilize internet search engines to gather information regarding the topic.
			Analyze gathered information for bias.
			Select valid internet data based on analysis.

Unit	Topic	Lesson	Objectives
		What Are Natural Resources?	
			Explain how natural resources are produced.
			Explain how fossil fuels are formed.
			Explain how resource availability is limited by rates of use and renewal.
		Nuclear Power	
			Compare and contrast the processes of nuclear fission and nuclear fusion.
			Describe uses of nuclear energy.
			Examine possible consequences of using nuclear energy.
		Resource Conservation	
			Assess the availability and allocation of resources.
			Discuss problems associated with the use of non-local resources.
			Compare and contrast uses of renewable and nonrenewable resources.
			Propose alternatives to using nonrenewable resources.
		The Social Costs of Resource Use	
			Compare and contrast the costs and benefits of using renewable and nonrenewable resources.
			Evaluate the consequences of world dependence on fuels.
			Explain how technology can be utilized in resource conservation efforts.
Societies and Policy			
	Ethics and Policy		
		Governments and Business	
			Illustrate how conservation efforts have positively impacted ecosystems.
			Compare the effects of government sanctioned activities on ecosystems.
			Assess the impact of government and business on energy efficiency.
		Informed Policy	
			Describe the influence that scientific knowledge has on society.
			Identify contributing factors to environmental policy decisions.
			Evaluate the benefits of monitoring environmental parameters when making policy regarding resource use.
		Impact of Policy	
			Assess the potential environmental consequences of policies that address social problems.
			Evaluate the effects of policies on global and local ecosystems.
			Propose possible effects of policies regarding sustainable land use.

Unit	Topic	Lesson	Objectives
		Milestones and Turning Points	
			Illustrate the impact of major milestones in environmental science.
			Predict possible milestones in environmental policy.
			Describe the efforts of various countries to reduce resource and ecological depletion.
		Global Connection: Newfoundland Cod Fishery Collapse	
			Assess the societal and environmental consequences of government policy.
	The Environment and Society		
		Skills Lesson: Forming a Valid Hypothesis	
			Identify contributing factors of an observed event or process.
			Determine relationships between contributing factors utilizing prior knowledge and research.
			Create an explanation based on the determined relationships.
			Utilize the explanation to form a valid hypothesis.
		Limiting Factors and Humans	
			Identify the influences of environment on behavior.
			Explain the impact of limiting factors on human society.
			Describe factors that can impact the stability of a society.
		Humans and the Energy Cycle	
			Describe the relationship between energy consumption and quality of living.
			Explain the impact of energy flow and cycles of matter on society.
		Societal Consequences	
			Determine the impact of biotechnology on society and the environment.
			Explain the benefits and disadvantages of scientific and medical advancements to society.
		The Environment and the Individual	
			Describe the relationship between the environment and personal health.
			Identify synthetic environmental health hazards.
		Other Influences on Personal Health	
			Describe the relationship between heredity and personal health.
			Compare and contrast the impact of genetic and environmental factors on individual and public health.
	The Environmental Impact of Humans and Technology		
		Natural Events and the Environment	
			Explain how human activities impact the effects of natural disasters.
			Describe the impact of natural disasters on local populations.

Unit	Topic	Lesson	Objectives
		Human Events and the Environment	
			Evaluate the impact of different agricultural techniques on the environment.
			Describe the effects of large-scale environmental catastrophes.
		Sustainability	
			Compare and contrast the impact of differing human lifestyles on sustainability.
			Describe future sustainability utilizing graphs and current data.
		Effects of Technology	
			Describe the impact of energy producing technologies on the environment and the acquisition of natural resources.
			Explain how energy producing technologies impact land fertility and aquatic viability.
		Success Stories	
			Describe various ways communities are attempting to restore and protect ecosystems.
			Give examples of emerging efforts designed to successfully address environmental issues.
		Global Connection: Nuclear Fuel	
			Evaluate the environmental impact of using nuclear fuel.