Unit	Topic	Lesson	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	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.
			Skills used: making logical connections, understanding cause and effect, interpreting observations
		Environmental Scientists and Ecologists	
			Summarize the work of famous environmental scientists of the past.
			Examine the contributions of environmental scientists to today's environment.
			Skills used: making predictions, identifying trends
		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.
			Skills used: identifying trends, making predictions, compare and contrast, interpreting observations
	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.
			Skills used: create a flow chart, compare and contrast
		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.
			Skills used: understanding cause and effect, making logical connections, interpreting observations

Unit	Topic	Lesson	Lesson Objectives
		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. Skills used: compare and contrast, create a structure diagram, understanding cause and effect, interpreting observations
		Adaptation	
			Describe the development of the theory of evolution. Explain the theory of evolution. Relate adaptations of organisms to resource competition. Skills used: create a timeline, making logical connections
		Global Connection: Changing Migratory Patterns	
			Explain how migratory patterns change in response to alterations in an ecosystem.
	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. Skills used: compare and contrast, understanding cause and effect
		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. Skills used: making predictions, making logical connections

Unit	Topic	Lesson	Lesson Objectives
		Land Habitats	
			Differentiate between biotic and abiotic factors in various ecosystems. Explain the adaptations of indigenous species to their respective ecosystems. Skills used: compare and contrast
		Aquatic Habitats	
			Compare and contrast the components of marine and freshwater ecosystems. Differentiate between terrestrial and aquatic energy pyramids. Skills used: compare and contrast
	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. Skills used: interpreting data, understanding cause and effect, making logical connections
		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. Skills used: interpreting data, understanding cause and effect
		Determining Population Size	
			Compare and contrast various methods of determining population size. Discriminate between major population growth models. Compute population density. Skills used: interpreting data, compare and contrast, calculating data
		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. Skills used: compare and contrast, create a structure diagram, interpreting data
		Global Connection: Human Impact on Population Size	
			Evaluate human impact on wildlife population size.

Unit	Topic	Lesson	Lesson Objectives
	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.
			Skills used: compare and contrast, understanding cause and effect, identifying trends
		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.
			Skills used: making logical connections, compare and contrast
		The Chaparral	
			Identify the characteristics of chaparral biomes.
			Evaluate ways organisms have adapted to chaparral.
			Skills used: making logical connections
		Alpine and Taiga Biomes	
			Identify the characteristics of the alpine and taiga biomes.
			Evaluate ways organisms have adapted to the alpine and taiga biomes.
			Skills used: making logical connections, compare and contrast
		The Tundra	
			Identify the characteristics of the tundra.
			Evaluate ways organisms have adapted to the tundra.
			Skills used: making logical connections

Unit	Topic	Lesson	Lesson Objectives
	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. Skills used: making logical connections, compare and contrast
		Deciduous Forests	
			Identify the characteristics of deciduous forests. Evaluate ways organisms have adapted to deciduous forests. Skills used: making logical connections
		The Rainforest	
			Identify the characteristics of the rainforest. Evaluate ways organisms have adapted to the rainforest. Skills used: making logical connections
		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. Skills used: compare and contrast, identifying trends
		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.

Unit	Topic	Lesson	Lesson Objectives
		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.
		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.
			Skills used: evaluate the validity of an explanation

Unit	Topic	Lesson	Lesson Objectives
		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.
			Skills used: compare and contrast support and opposition
	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.
			Skills used: making predictions based on data
		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.
			Skills used: compare and contrast support and opposition
		Global Connection: Algal Blooms	
			Connect the formation of algal blooms to climate change.

Unit	Topic	Lesson	Lesson Objectives
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.
			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
	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.
			Skills used: determine the cause and predict the effect

Unit	Topic	Lesson	Lesson Objectives
		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
		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	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. 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
		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
	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

Unit	Topic	Lesson	Lesson Objectives
		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. Skills used: selecting valid resources
		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. Skills used: forming a valid hypothesis

Unit	Topic	Lesson	Lesson Objectives
		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.
			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.
	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.
			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.

Unit	Topic	Lesson	Lesson Objectives
	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.
		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.
			Skills used: determining independent and dependent variables

Unit	Topic	Lesson	Lesson Objectives
		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. Skills used: making logical connections, creating diagrams, compare and contrast
		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. Skills used: making logical connections, creating a flow chart
		Photosynthesis in Plants	
			Explain the process of photosynthesis in plants. Distinguish between the main types of carbon fixation. Skills used: proposing logical alternatives
		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	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. Skills used: making predictions, compare and contrast, researching with technology, making logical connections
		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. Skills used: researching with technology, modeling systems, compare and contrast, making logical connections
		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. Skills used: compare and contrast, proposing alternative solutions, researching with technology
		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. Skills used: making logical connections, evaluating explanations, compare and contrast
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. Skills used: making logical connections, interpreting observations, supporting claims, making predictions, compare and contrast

Unit	Topic	Lesson	Lesson Objectives
		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. Skills used: compare and contrast, making logical connections, supporting claims, understanding cause and effect
		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. Skills used: supporting claims, plotting trends, making predictions, interpreting observations, compare and contrast
		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. Skills used: making valid criticisms, understanding cause and effect, researching with technology, making predictions, identifying trends
		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.

Unit	Topic	Lesson	Lesson Objectives
		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. Skills used: making logical connections, supporting claims, understanding cause and effect, making valid criticisms
		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. Skills used: creating a flow chart, making predictions, making logical connections, identifying trends and patterns
		Societal Consequences	
			Determine the impact of biotechnology on society and the environment. Explain the benefits and disadvantages of scientific and medical advancements to society. Skills used: supporting claims, researching with technology, making valid criticisms, understanding cause and effect
		The Environment and the Individual	
			Describe the relationship between the environment and personal health. Identify synthetic environmental health hazards. Skills used: making logical connections, interpreting observations, understanding cause and effect, compare and contrast
		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. Skills used: compare and contrast, understanding cause and effect, making predictions

Unit	Topic	Lesson	Lesson Objectives
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. Skills used: understanding cause and effect, graphing projections, making logical connections, supporting claims
		Human Events and the Environment	
			Evaluate the impact of different agricultural techniques on the environment. Describe the effects of large-scale environmental catastrophes. Skills used: making predictions, identifying trends, understanding cause and effect, graphing projections, compare and contrast, making valid criticisms, supporting claims
		Sustainability	
			Compare and contrast the impact of differing human lifestyles on sustainability. Describe future sustainability utilizing graphs and current data. Skills used: making predictions, identifying trends, understanding cause and effect, compare and contrast, graphing projections
		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. Skills used: making predictions, identifying trends, researching with technology, understanding cause and effect, interpreting observations, evaluating explanations, making valid criticisms
		Success Stories	
			Describe various ways communities are attempting to restore and protect ecosystems. Give examples of emerging efforts designed to successfully address environmental issues. Skills used: understanding cause and effect
		Global Connection: Nuclear Fuel	
			Evaluate the environmental impact of using nuclear fuel.