

Environmental Systems explores the biological, physical, and sociological principles related to the environment in which organisms live on Earth, the biosphere. Course topics include natural systems on Earth, biogeochemical cycles, the nature of matter and energy, the flow of matter and energy through living systems, populations, communities, ecosystems, ecological pyramids, renewable and non-renewable natural resources, land use, biodiversity, pollution, conservation, sustainability, and human impacts on the environment.

The course provides students with opportunities to learn and practice scientific skills within the context of relevant scientific questions. Scientific inquiry skills are embedded in the direct instruction, wherein students learn to ask scientific questions, deconstruct claims, form and test hypotheses, and use logic and evidence to draw conclusions about the concepts. Case studies of current environmental challenges introduce each content lesson and acquaint students with real-life environmental issues, debates, and solutions. Lab activities reinforce critical thinking, writing, and communication skills and help students develop a deeper understanding of the nature of science. Virtual Lab activities enable students to engage in investigations that require long periods of observation at remote locations and to explore simulations that enable environmental scientists to test predictions. Throughout this course, students are given an opportunity to understand how biology, earth science, and physical science are applied to the study of the environment and how technology and engineering are contributing solutions for studying and creating a sustainable biosphere.

This course is built to the TEKS Environmental Systems standards.

Length: One Semester

UNIT 1: INTRODUCTION TO ENVIRONMENTAL SCIENCE

LESSON 1: WHAT IS SCIENCE?

Study: The Nature of Science

Distinguish what science is from what science is not. Identify scientists throughout time and from all parts of Earth who have observed the natural world. Summarize the importance of logical reasoning, experimentation, empirical evidence, argumentation, and ethics in scientific endeavors.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: The Nature of Science

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: The Practice of Science

Explain how scientific data and conclusions can be reliable and valid, yet open to change. Describe each of the basic parts that may compose a scientific process that produces valid and reliable data. Summarize the importance of logical reasoning, experimentation, empirical evidence, argumentation, and ethics in scientific endeavors.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: The Practice of Science

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Checkup: What Is Science?

Distinguish what science is from what science is not. Identify scientists throughout time and from all parts of Earth who have observed the natural world. Explain how scientific data and conclusions can be reliable and valid, yet open to change. Describe each of the basic parts that may compose a scientific process that produces valid and reliable data. Summarize the importance of logical reasoning, experimentation, empirical evidence, argumentation, and ethics in scientific endeavors.

Duration: 0 hrs 15 mins Scoring: 0 points

LESSON 2: SCIENCE AND THE ENVIRONMENT

Study: Fields of Science

Identify the many fields of science that contribute to the study and understanding of the interrelated, dynamic systems of Earth's environment. Relate examples of environmental studies and equipment to specialized fields of science. Recommend areas of expertise that might contribute information relevant to specific environmental issues.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Fields of Science

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 10 points

Study: Applied Science and Technology

Describe the role of technology in environmental science and human society. Identify commonly used devices and systems that are important to environmental studies. Describe the importance of technology and environmental studies to human health and well-being.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Applied Science and Technology

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Explore: GPS and GIS Technology

Relate examples of environmental studies and equipment to specialized fields of science. Describe the role of technology in environmental science and human society. Identify commonly used devices and systems that are important to environmental studies. Describe the importance of technology and environmental studies to human health and well-being.

Duration: 1 hr 30 mins Scoring: 30 points

Practice: Science and the Environment

Identify the many fields of science that contribute to the study and understanding of the interrelated, dynamic systems of Earth's environment. Relate examples of environmental studies and equipment to specialized fields of science.

Recommend areas of expertise that might contribute information relevant to specific environmental issues. Describe the role of technology in environmental science and human society. Identify commonly used devices and systems that are important to environmental studies. Use the Internet to locate and collect information about GPS and GIS technology. Discuss the validity and impact of scientific research on environmental issues related to human activities.

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 3: DOING SCIENCE: INTRODUCTION TO ENVIRONMENTAL SCIENCE

Study: Investigate Cycling of O₂ and CO₂

Investigate the cycling of oxygen gas and carbon dioxide gas. Formulate a hypothesis and design a controlled experiment to test it. Describe common laboratory tools and techniques used to conduct the experiment you designed.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Investigate Cycling of O₂ and CO₂

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 10 points

Lab: Investigate Cycling of O₂ and CO₂

Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error.

Duration: 1 hr 30 mins Scoring: 40 points

Discuss: Investigate Cycling of O₂ and CO₂

Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.

LESSON 4: INTRODUCTION TO ENVIRONMENTAL SCIENCE WRAP-UP

Review: What Is Science?

Review what you have learned in this unit.

Duration: 1 hr Scoring: 0 points

Test (CS): What Is Science?

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

Test (TS): What Is Science?

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 2: EARTH'S PHYSICAL SYSTEMS

LESSON 1: THE HYDROSPHERE

Study: The Oceans

Describe the reasons that liquid water can exist on Earth. Describe the formation of and characteristics of the major types of bodies of water. Identify reasons for fluctuations in sea level.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: The Oceans

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Bodies of Freshwater

Identify the characteristics of the major types of bodies of water. Describe the formation of and characteristics of the major types of bodies of water.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Bodies of Freshwater

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Movements of the Hydrosphere

Relate solar energy to ocean currents and the distribution of heat around the globe. Describe the causes and effects of ocean waves and tides. Trace the path of groundwater from soil to the ocean.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Movements of the Hydrosphere

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: The Hydrosphere

Describe the reasons that liquid water can exist on Earth. Describe the formation of and characteristics of the major types of bodies of water. Relate solar energy to ocean currents and the distribution of heat around the globe. Identify reasons for fluctuations in sea level. Describe the causes and effects of ocean waves and tides. Trace the path of groundwater from soil to the ocean.

Duration: 0 hrs 30 mins Scoring: 10 points

Project: Explore Your Local Physical Environment

Research and describe the physical features and abiotic factors that characterize the geographical area in which you live.

Duration: 3 hrs Scoring: 50 points

LESSON 2: THE LITHOSPHERE

Study: Earth's Crust and Landforms

Relate the surface features of Earth's crust to the theory of plate tectonics. Distinguish erosional features and

depositional features of Earth's crust.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Earth's Crust and Landforms

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Soil Composition and Structure

Identify the types of weathering and the agents of each type of weathering. Describe the types of soil and the processes of soil formation.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Soil Composition and Structure

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Movements of Land and Soil

Identify the types of erosion and their effects on Earth's crust. Relate the different types of faults to the different types of tectonic plate boundaries.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Movements of Land and Soil

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Explore: Earthquake Prediction and Readiness

Recognize areas on Earth where earthquakes are likely to occur. Distinguish the three types of earthquake waves. Describe how geologists rate the destructive force of an earthquake. Identify ways that human communities in earthquake zones can prepare for and limit damages caused by strong earthquakes.

Duration: 1 hr 30 mins Scoring: 30 points

Checkup: The Lithosphere

Relate the surface features of Earth's crust to the theory of plate tectonics. Distinguish erosional features and depositional features of Earth's crust. Identify the types of weathering and the agents of each type of weathering. Describe the types of soil and the processes of soil formation. Identify the types of erosion and their effects on Earth's crust. Relate the different types of faults to the different types of tectonic plate boundaries. Discuss the validity and impact of scientific research on environmental issues related to human activities.

Duration: 0 hrs 15 mins Scoring: 0 points

LESSON 3: THE ATMOSPHERE

Study: Structure and Movements of the Atmosphere

Describe the structure, composition, and temperature of Earth's atmosphere. Identify the processes of wind generation and relate them to different types of local and global wind systems.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Structure and Movements of the Atmosphere

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Weather and Climate

Describe the major climate zones and their characteristics. Explain how ocean currents, wind patterns, and topography affect climate. Explain how Earth's orbit, tilt, and wobble affect the planet's climate. Describe the effects of El Niño and La Niña on global weather patterns.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Weather and Climate

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: The Atmosphere

Describe the structure, composition, and temperature of Earth's atmosphere. Identify the processes of wind generation and relate them to different types of local and global wind systems. Describe the major climate zones and their characteristics. Explain how ocean currents, wind patterns, and topography affect climate. Explain how Earth's orbit, tilt, and wobble affect the planet's climate. Describe the effects of El Niño and La Niña on global weather patterns. Discuss the validity and impact of scientific research on environmental issues related to human activities.

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 4: DOING SCIENCE: EARTH'S PHYSICAL SYSTEMS

Study: Investigate Weathering and Erosion

Formulate a hypothesis and design a controlled experiment to test it. Describe common laboratory tools and techniques used to conduct the experiment you designed.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Investigate Weathering and Erosion

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 10 points

Lab: Investigate Weathering and Erosion

Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error.

Duration: 1 hr 30 mins Scoring: 40 points

Discuss: Investigate Weathering and Erosion

Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.

Duration: 0 hrs 20 mins Scoring: 10 points

LESSON 5: EARTH'S PHYSICAL SYSTEMS WRAP-UP

Review: Earth's Physical Systems

Review what you have learned in this unit.

Duration: 1 hr Scoring: 0 points

Test (CS): Earth's Physical Systems

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

Test (TS): Earth's Physical Systems

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 3: THE BIOSPHERE

LESSON 1: NATURE OF THE BIOSPHERE

Study: Biotic and Abiotic Factors

Recognize the major types of biotic factors in an ecosystem and their roles in the biosphere. Distinguish biological species, populations, and communities. Identify the abiotic factors in an ecosystem. Explain how biotic factors interact with the abiotic factors of an ecosystem.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Biotic and Abiotic Factors

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Biogeochemical Cycles

Trace the movement of water in the water cycle from one part of the environment to another. Trace the movement of carbon in the carbon cycle from one part of the environment to another. Trace the movement of nitrogen and

phosphorus from one part of the environment to another.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Biogeochemical Cycles

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: Nature of the Biosphere

Recognize the major types of biotic factors in an ecosystem and their roles in the biosphere. Distinguish biological species, populations, and communities. Identify the abiotic factors in an ecosystem and their importance to living organisms. Explain how biotic factors interact with the abiotic factors of an ecosystem. Trace the movement of water in the water cycle from one part of the environment to another. Trace the movement of carbon in the carbon cycle from one part of the environment to another. Trace the movement of nitrogen and phosphorus from one part of the environment to another.

Duration: 0 hrs 30 mins Scoring: 10 points

Project: Explore Your Local Ecosystem

Recognize the major types of biotic factors in an ecosystem and their roles in the biosphere. Distinguish biological species, populations, and communities. Identify the abiotic factors in an ecosystem and their importance to living organisms. Explain how biotic factors interact with the abiotic factors of an ecosystem.

Duration: 3 hrs Scoring: 50 points

LESSON 2: MATTER AND ENERGY IN THE BIOSPHERE

Study: Matter and Energy

Recognize the major types of matter that make up the biosphere. Recognize the forms of energy that enter and flow through the geosphere. Identify the processes that transform energy as it moves through the geosphere. Compare the characteristics of different surfaces on Earth, including albedo and heat capacity. Differentiate among scavengers, decomposers, and detritivores. Trace the flow of matter and energy through a food chain and a food web.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Matter and Energy

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: The Flow of Matter and Energy

Differentiate among scavengers, decomposers, and detritivores. Trace the flow of matter and energy through a food chain and a food web.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: The Flow of Matter and Energy

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: Matter and Energy in the Biosphere

Recognize the major types of matter that make up the biosphere. Recognize the forms of energy that enter and flow through the geosphere. Identify the processes that transform energy as it moves through the geosphere. Compare the characteristics of different surfaces on Earth, including albedo and heat capacity. Differentiate among scavengers, decomposers, and detritivores. Trace the flow of matter and energy through a food chain and a food web.

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 3: ECOSYSTEMS AND BIOMES

Study: Terrestrial Biomes

Describe characteristics of land ecosystems.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Terrestrial Biomes

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Aquatic Ecosystems

Describe characteristics of aquatic ecosystems.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Aquatic Ecosystems

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Land Ecosystems

Identify the major land and aquatic biomes. Describe the distinguishing biotic and abiotic features of a given biome.

Compare the plants and animals of your local biome with those of the other major biomes found in North America.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Land Ecosystems

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Explore: The Importance of Coral Reefs

Describe characteristics of aquatic ecosystems. Evaluate the importance of individual ecosystems to the health of biomes and the biosphere.

Duration: 1 hr 30 mins Scoring: 30 points

Checkup: Ecosystems and Biomes

Describe characteristics of land ecosystems. Describe characteristics of aquatic ecosystems. Identify the major land and aquatic biomes. Describe the distinguishing biotic and abiotic features of a given biome. Compare the plants and animals of your local biome with those of the other major biomes found in North America. Evaluate the importance of individual ecosystems to the health of biomes and the biosphere. Discuss the validity and impact of scientific research on environmental issues related to human activities.

Duration: 0 hrs 15 mins Scoring: 0 points

LESSON 4: DOING SCIENCE: THE BIOSPHERE

Study: Investigate Using a Dichotomous Key

Describe the use of dichotomous keys in the identification of plants and animals. Formulate a hypothesis and design a controlled experiment to test it. Describe common laboratory tools and techniques used to conduct the experiment you designed.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Investigate Using a Dichotomous Key

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 10 points

Lab: Investigate Using a Dichotomous Key

Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error

Duration: 1 hr 30 mins Scoring: 40 points

Discuss: Investigate Using a Dichotomous Key

Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.

Duration: 0 hrs 20 mins Scoring: 10 points

LESSON 5: THE BIOSPHERE WRAP-UP

Review: The Biosphere

Review what you have learned in this unit.

Duration: 1 hr Scoring: 0 points

Test (CS): The Biosphere

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

Test (TS): The Biosphere

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 4: ECOLOGY

LESSON 1: POPULATIONS

Study: Characteristics of Populations

Identify characteristics used to describe populations. Identify limiting factors that affect populations and their characteristics. Describe a population's carrying capacity and the factors that determine the carrying capacity. Explain how populations change in size.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Characteristics of Populations

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Population Growth

Describe the factors that produce both positive and negative population growth. Compare exponential and logistic patterns of population growth. Explain the significance of studying populations over time.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Population Growth

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: Populations

Identify characteristics used to describe populations. Identify limiting factors that affect populations and their characteristics. Describe a population's carrying capacity and the factors that determine the carrying capacity. Explain how populations change in size. Describe the factors that produce both positive and negative population growth. Compare exponential and logistic patterns of population growth. Explain the significance of studying populations over time.

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 2: COMMUNITIES

Study: What Is a Biological Community?

Distinguish biological communities from populations and ecosystems. Identify major types of biological communities.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: What Is a Biological Community?

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Species Interactions

Describe the types of interactions that occur among the species in biological communities. Analyze food chains and food webs that describe the interactions of species in a biological community. Explain the nature and importance of ecological niches.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Species Interactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Community Structure

Model the makeup of communities using ecological pyramids. Understand the factors that affect community stability and biodiversity.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Community Structure

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: Communities

Distinguish biological communities from populations and ecosystems. Identify major types of biological communities. Describe the types of interactions that occur among the species in biological communities. Analyze food chains and food webs that describe the interactions of species in a biological community. Explain the nature and importance of an ecological niche. Model the makeup of communities using ecological pyramids. Understand the factors that affect community stability and biodiversity

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 3: CHANGES IN ECOSYSTEMS

Study: Natural Disturbances and Succession

Describe how destructive natural events in the geosphere can affect ecosystems. Predict the effects of the removal of species from biological communities. Predict the effects of the introduction of nonnative species on communities.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Natural Disturbances and Succession

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Evolution and Biodiversity

Identify the sources and importance of genetic diversity in natural populations, ecosystems, and the biosphere. Summarize the process of natural selection and its role in biological evolution. Predict changes that may occur in an ecosystem when its amount of biodiversity changes.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Evolution and Biodiversity

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Explore: Biodiversity Hot Spots

Summarize the process of natural selection and its role in biological evolution. Explain the importance of biodiversity in the biosphere.

Duration: 1 hr 30 mins Scoring: 30 points

Checkup: Changes in Ecosystems

Describe how destructive natural events in the geosphere can affect ecosystems. Predict the effects of the removal of species from biological communities. Predict the effects of the introduction of nonnative species on communities. Recognize the sources and importance of genetic diversity in natural populations, ecosystems, and the biosphere. Summarize the process of natural selection and its role in biological evolution. Predict changes that may occur in an ecosystem when its amount of biodiversity changes. Discuss the validity and impact of scientific research on environmental issues related to human activities.

Duration: 0 hrs 15 mins Scoring: 0 points

LESSON 4: DOING SCIENCE: ECOLOGY

Study: Investigate Cycling of Matter and Energy

Formulate a hypothesis and design a controlled experiment to test it. Describe common laboratory tools and techniques used to conduct the experiment you designed.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Investigate Cycling of Matter and Energy

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 10 points

Lab: Investigate Cycling of Matter and Energy

Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error.

Duration: 1 hr 30 mins Scoring: 40 points

Discuss: Investigate Cycling of Matter and Energy

Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.

Duration: 0 hrs 20 mins Scoring: 10 points

LESSON 5: ECOLOGY WRAP-UP

Review: Ecology

Review what you have learned in this unit.

Duration: 1 hr Scoring: 0 points

Test (CS): Ecology

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

Test (TS): Ecology

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 5: SEMESTER 1 WRAP-UP

LESSON 1: SEMESTER 1 WRAP-UP

Review: Semester 1 Review

Review what you have learned in this semester.

Duration: 1 hr Scoring: 0 points

Exam: Semester 1 Computer-Scored Exam

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 0 hrs 40 mins Scoring: 100 points

Final Exam: Semester 1 Teacher-Scored Exam

Take a teacher-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 1 hr Scoring: 50 points

UNIT 6: HUMANS AND THE ENVIRONMENT

LESSON 1: HUMAN SOCIETIES

Study: Human Populations

Describe historical trends in human population growth and distribution. Identify characteristics of human populations.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Human Populations

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Human Communities

Describe the purposes of human communities. Identify different kinds of human communities. Explain how individuals work together in groups. Explain how individuals and groups work together in communities.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Human Communities

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Checkup: Human Societies

Describe historical trends in human population growth and distribution. Identify characteristics of human populations. Describe the purposes of human communities. Identify different kinds of human communities. Explain how individuals work together in groups. Explain how individuals and groups work together in communities.

Duration: 0 hrs 15 mins Scoring: 0 points

Explore: Public Health Policies

Research objectives and accomplishments of public health policies.

Duration: 1 hr 30 mins Scoring: 30 points

LESSON 2: EARTH'S NATURAL RESOURCES

Study: Land and Water Resources

Identify natural resources obtained from Earth's land and water and used to support the lifestyles of humans.

Recognize the interdependence of natural resources. Evaluate the economic significance of natural resources.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Land and Water Resources

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Mineral and Energy Resources

Identify types and sources of mineral resources used to produce goods and energy that support human lifestyles.

Recognize the interdependence of natural resources.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Mineral and Energy Resources

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Biological Resources

Identify types and sources of biological resources used to produce food and goods that support human lifestyles.

Evaluate the economic significance of natural resources. Recognize the interdependence of natural resources.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Biological Resources

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: Earth's Natural Resources

Identify the types of Earth's land and water used to support the lifestyles of humans. Identify types and sources of mineral resources used to produce goods and energy that support human lifestyles. Recognize the interdependence of natural resources. Identify types and sources of biological resources used to produce food and goods that support human lifestyles.

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 3: LAND USE AND ITS EFFECTS

Study: Agriculture, Forestry, and Fishing

Evaluate the economic significance of natural resources. Summarize the effects and cost-benefit trade-offs of practices used in commercial agriculture, forestry, and fishing. Evaluate the hazards and risks involved in obtaining natural resources.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Agriculture, Forestry, and Fishing

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Mining and Drilling

Evaluate the economic significance of natural resources. Evaluate the hazards and risks to human health and well-being

involved in obtaining and managing natural resources. Summarize the advantages and disadvantages of using different energy resources.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Mining and Drilling

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Recreation, Conservation, and Urban Development

Summarize the effects on natural ecosystems of human activities such as recreation, urbanization, conservation, preservation, restoration, and resource gathering and management.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Recreation, Conservation, and Urban Development

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: Land Use and Its Effects

Evaluate the economic significance of natural resources. Summarize the effects and cost-benefit trade-offs of practices used in commercial agriculture, forestry, and fishing. Evaluate the hazards and risks involved in obtaining natural resources. Evaluate the hazards and risks to human health and well-being involved in obtaining and managing natural resources. Summarize the advantages and disadvantages of using different energy resources. Summarize the effects on natural ecosystems of human activities such as recreation, urbanization, conservation, preservation, restoration, and resource gathering and management. Discuss the validity and impact of scientific research on environmental issues related to human activities.

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 4: DOING SCIENCE: HUMANS AND THE ENVIRONMENT

Study: Investigate Resource Consumption

Learn about resource consumption.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Investigate Resource Consumption

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 10 points

Lab: Investigate Resource Consumption

Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error.

Duration: 1 hr 30 mins Scoring: 40 points

Discuss: Investigate Resource Consumption

Discuss the results of the resource consumption investigation.

Duration: 0 hrs 20 mins Scoring: 10 points

LESSON 5: HUMANS AND THE ENVIRONMENT WRAP-UP

Review: Humans and the Environment

Review what you have learned in this unit.

Duration: 1 hr Scoring: 0 points

Test (CS): Humans and the Environment

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

Test (TS): Humans and the Environment

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 7: ENVIRONMENTAL CHALLENGES

LESSON 1: RESOURCE AVAILABILITY

Study: Renewable Resources

Identify renewable resources on which humans depend. Differentiate between renewable and nonrenewable resources. Evaluate the cost-benefit trade-offs of using renewable resources instead of nonrenewable resources.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Renewable Resources

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Nonrenewable Resources

Identify nonrenewable resources on which humans depend. Differentiate between renewable and nonrenewable resources. Describe how the use of natural resources will affect future generations of humans.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Nonrenewable Resources

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Alternative Energy Resources

Describe how the use of natural resources will affect future generations of humans. Describe alternative forms of energy production.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Alternative Energy Resources

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: Resource Availability

Identify renewable resources on which humans depend. Identify nonrenewable resources on which humans depend. Differentiate between renewable and nonrenewable resources. Evaluate the cost-benefit trade-offs of using renewable resources instead of nonrenewable resources. Describe how the use of natural resources will affect future generations of humans. Describe alternative forms of energy production.

Duration: 0 hrs 30 mins Scoring: 10 points

Project: Explore Your Local Environmental Challenges

Research and describe environmental challenges that affect the geographical area in which you live.

Duration: 3 hrs Scoring: 50 points

LESSON 2: POLLUTION AND WASTE MANAGEMENT

Study: Water, Air, and Land Pollution

Identify point sources and nonpoint sources of air, land, and water pollution. Describe the effects of pollution on oceans, freshwater supplies, air, and land. Recognize the consequences of air, land, and water pollution on human health and societies. Evaluate the hazards pollutants pose to wildlife and other types of natural resources.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Water, Air, and Land Pollution

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Waste Management

Describe methods of waste management, including burial in a landfill, dumping, incineration, composting, recycling, and reuse. Evaluate the impact of waste management and reduction strategies on resource availability.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Waste Management

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: Pollution and Waste Management

Identify point sources and nonpoint sources of air, land, and water pollution. Describe the effects of pollution on oceans, freshwater supplies, air, and land. Recognize the consequences of air, land, and water pollution on human health and societies. Evaluate the hazards pollutants pose to wildlife and other types of natural resources. Describe methods of waste management, including burial in a landfill, dumping, incineration, composting, recycling, and reuse. Evaluate the impact of waste management and reduction strategies on resource availability.

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 3: ENVIRONMENTAL CHANGE

Study: Climate Change

Describe effects of air pollution on the natural systems that regulate Earth's climate. Analyze the historical trends observed in global climate data. Relate human activities to observed changes in global climate. Evaluate differing views on global warming and climate change.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Climate Change

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Effects of Climate Change

Summarize scientists' predictions about the effects of global climate change on the biosphere. Evaluate differing views on global warming and climate change.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Effects of Climate Change

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Explore: Effects of Climate Change

Explore scientists' predictions about the effects of global climate change on the biosphere.

Duration: 1 hr 30 mins Scoring: 30 points

Checkup: Environmental Change

Describe effects of air pollution on the natural systems that regulate Earth's climate. Analyze the historical trends observed in global climate data. Relate human activities to observed changes in global climate. Evaluate differing views on global warming and climate change. Summarize scientists' predictions about the effects of global climate change on the biosphere. Discuss the validity and impact of scientific research on environmental issues related to human activities.

Duration: 0 hrs 15 mins Scoring: 0 points

LESSON 4: DOING SCIENCE: ENVIRONMENTAL CHALLENGES

Study: Investigate How Pollutants Affect Plants

Learn about how pollutants affect plant life.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Investigate How Pollutants Affect Plants

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 10 points

Lab: Investigate How Pollutants Affect Plants

Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error.

Duration: 1 hr 30 mins Scoring: 40 points

Discuss: Investigate How Pollutants Affect Plants

Discuss the results of the investigation.

Duration: 0 hrs 20 mins Scoring: 10 points

LESSON 5: ENVIRONMENTAL CHALLENGES WRAP-UP

Review: Environmental Challenges

Review what you have learned in this unit.

Duration: 1 hr Scoring: 0 points

Test (CS): Environmental Challenges

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

Test (TS): Environmental Challenges

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 8: POLITICS AND THE ENVIRONMENT

LESSON 1: THE CONCEPT OF THE COMMONS

Study: The Tragedy of the Commons

Recognize the definition and examples of a "common." Describe how the overuse and degradation of natural resources affects the biosphere and human societies.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: The Tragedy of the Commons

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Managing the Commons

Describe how conservation and preservation of natural resources affect their availability and quality. Relate conservation and preservation of natural resources to the sustainability of ecosystems and human societies.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Managing the Commons

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: The Concept of the Commons

Recognize the definition and examples of a "common." Describe how the overuse and degradation of natural resources affects the biosphere and human societies. Describe how conservation and preservation of natural resources affect their availability and quality. Relate conservation and preservation of natural resources to the sustainability of ecosystems and human societies.

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 2: NATIONAL ENVIRONMENTAL POLICIES

Study: Protecting Water, Air, and Land

Summarize the history, provisions, and effects of the National Park Service Act. Summarize the history, provisions, and effects of the Clean Air Act. Summarize the history, provisions, and effects of the Clean Water Act. Summarize the history, provisions, and effects of the Soil and Water Resources Conservation Act.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Protecting Water, Air, and Land

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Protecting Endangered Species

Summarize the history, provisions, and effects of the Endangered Species Act.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Protecting Endangered Species

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Checkup: National Environmental Policies

Summarize the history, provisions, and effects of the National Park Service Act. Summarize the history, provisions, and effects of the Clean Air Act. Summarize the history, provisions, and effects of the Clean Water Act. Summarize the history, provisions, and effects of the Soil and Water Resources Conservation Act. Summarize the history, provisions, and effects of the Endangered Species Act.

Duration: 0 hrs 15 mins Scoring: 0 points

Explore: Species Survival Plans

Explore the idea of species survival plans.

Duration: 1 hr 30 mins Scoring: 30 points

LESSON 3: GLOBAL ENVIRONMENTAL POLICIES

Study: Protecting Environmental Quality

Summarize the goals and provisions of international treaties and protocols that address the effects of human activities on the environment, including the Antarctic Treaty System, Montreal Protocol, and Kyoto Protocol. Evaluate the effects of international treaties and protocols on environmental quality and global cooperation.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Protecting Environmental Quality

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Protecting Wildlife and Biodiversity

Summarize the goals and provisions of international treaties and protocols that address biodiversity, such as the United Nations' Convention of International Trade in Endangered Species (CITES), the RAMSAR Convention on Wetlands, the International Treaty on Plant Genetic Resources for Food and Agriculture, and the Convention on Biological Diversity. Evaluate the effects of international treaties and protocols on environmental quality and global cooperation.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Protecting Wildlife and Biodiversity

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: Global Environmental Policies

Summarize the goals and provisions of international treaties and protocols that address the effects of human activities on the environment, including the Antarctic Treaty System, Montreal Protocol, and Kyoto Protocol. Summarize the goals and provisions of international treaties and protocols that address biodiversity, such as the United Nations' Convention of International Trade in Endangered Species (CITES), the RAMSAR Convention on Wetlands, the International Treaty on Plant Genetic Resources for Food and Agriculture, and the Convention on Biological Diversity. Evaluate the effects of international treaties and protocols on environmental quality and global cooperation. Discuss the validity and impact of scientific research on environmental issues related to human activities.

Duration: 0 hrs 30 mins Scoring: 10 points

LESSON 4: DOING SCIENCE: POLITICS AND THE ENVIRONMENT

Study: Investigate Your Ecological Footprint

Learn about ecological footprints.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Investigate Your Ecological Footprint

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 10 points

Lab: Investigate Your Ecological Footprint

Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and

identifying sources of error.

Duration: 1 hr 30 mins Scoring: 40 points

Discuss: Investigate Your Ecological Footprint

Discuss the results of the investigation.

Duration: 0 hrs 20 mins Scoring: 10 points

LESSON 5: POLITICS AND THE ENVIRONMENT WRAP-UP

Review: Politics and the Environment

Review what you have learned in this unit.

Duration: 1 hr Scoring: 0 points

Test (CS): Politics and the Environment

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

Test (TS): Politics and the Environment

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 9: SUSTAINABILITY FOR THE FUTURE

LESSON 1: THE GLOBAL COMMUNITY

Study: Human Cultures and Societies

Summarize the nature and purpose of human cultures and societies. Identify examples of different types of human cultures and societies.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Human Cultures and Societies

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: The Global Economy

Recognize the interrelatedness of the global economy. Identify complex real-world problems faced by the global economy. Evaluate possible solutions to complex real-world problems in a global economy. Evaluate the need for cooperative human behaviors in mitigating and preventing complex real-world problems.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: The Global Economy

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Practice: The Global Community

Summarize the nature and purpose of human cultures and societies. Identify examples of different types of human cultures and societies. Recognize the interrelatedness of the global economy. Identify complex real-world problems faced by the global economy. Evaluate possible solutions to complex real-world problems in a global economy. Evaluate the need for cooperative human behaviors in mitigating and preventing complex real-world problems.

Duration: 0 hrs 30 mins Scoring: 10 points

Project: Explore Sustainability for Your Local Environment

Identify your state and local legislation designed to protect the environment and natural resources. Evaluate the effects of national, state, and local environmental and resource protection laws on your local environment. Identify sustainable practices that have been adopted in your local environment. Recommend practices that might contribute to the sustainability of your local environment.

Duration: 3 hrs Scoring: 50 points

LESSON 2: SUSTAINABLE PRACTICES

Study: Sustainable Food Production

Explain the goal of using sustainable practices in food production, resource management, and human societal

development. Describe sustainable methods of food production, resource management, and human societal development. Compare traditional practices used in food production, resource management, and human societal development with sustainable practices. Identify advantages and disadvantages of using "green" and sustainable practices in food production, resource management, and human societal development.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Sustainable Food Production

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Sustainable Resource Management

Explain the goal of using sustainable practices in food production, resource management, and human societal development. Describe sustainable methods of food production, resource management, and human societal development. Compare traditional practices used in food production, resource management, and human societal development with sustainable practices. Identify advantages and disadvantages of using "green" and sustainable practices in food production, resource management, and human societal development.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Sustainable Resource Management

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Study: Sustainable Societal Development

Explain the goal of using sustainable practices in food production, resource management, and human societal development. Describe sustainable methods of food production, resource management, and human societal development. Compare traditional practices used in food production, resource management, and human societal development with sustainable practices. Identify advantages and disadvantages of using "green" and sustainable practices in food production, resource management, and human societal development.

Duration: 1 hr 30 mins Scoring: 0 points

Quiz: Sustainable Societal Development

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 20 points

Explore: Carbon Dioxide Sequestration

Summarize the process of carbon dioxide sequestration and technologies that achieve it.

Duration: 1 hr 30 mins Scoring: 30 points

Checkup: Sustainable Practices

Explain the goal of using sustainable practices in food production, resource management, and human societal development. Describe sustainable methods of food production, resource management, and human societal development. Compare traditional practices used in food production, resource management, and human societal development with sustainable practices. Identify advantages and disadvantages of using "green" and sustainable practices in food production, resource management, and human societal development. Summarize the process of carbon dioxide sequestration and technologies that achieve it. Discuss the validity and impact of scientific research on environmental issues related to human activities.

Duration: 0 hrs 15 mins Scoring: 0 points

LESSON 3: DOING SCIENCE: SUSTAINABILITY FOR THE FUTURE

Study: Investigate Food Security

Learn about sustainable gardening.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Investigate Food Security

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 15 mins Scoring: 10 points

Lab: Investigate Food Security

Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error.

Duration: 1 hr 30 mins Scoring: 40 points

Discuss: Investigate Food Security

Discuss the results of the investigation.

Duration: 0 hrs 20 mins Scoring: 10 points

LESSON 4: SUSTAINABILITY FOR THE FUTURE WRAP-UP

Review: Sustainability for the Future

Review what you have learned in this unit.

Duration: 1 hr Scoring: 0 points

Test (CS): Sustainability for the Future

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

Test (TS): Sustainability for the Future

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 10: SEMESTER 2 WRAP-UP

LESSON 1: SEMESTER 2 WRAP-UP

Review: Semester 2 Review

Review what you have learned in this unit.

Duration: 1 hr Scoring: 0 points

Exam: Semester 2 Computer-Scored Exam

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 0 hrs 40 mins Scoring: 100 points

Final Exam: Semester 2 Teacher-Scored Exam

Take a teacher-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 1 hr Scoring: 50 points