

SCS 6th Grade Yearlong Scope and Sequence

Unit 1 Energy	Unit 2 Relationships Among Organisms	Unit 3 Earth's Biomes and Ecosystems	Unit 4 Earth's Resources and Human Impact on the Environment	Unit 5 Earth's Water	Unit 6 Earth's Systems	Unit 7 Weather and Climate
9 weeks	3 weeks	6 weeks	3 weeks	3 weeks	3 weeks	9 weeks

UNIT 1: Energy [9 weeks]

Overarching Question(s)	Disciplinary Core Ideas	Standards	Science & Engineering Practices
How is energy transferred and conserved?	6.PS3: Energy 6.ETS1: Engineering Design	6.PS3.1 Analyze the properties and compare sources of kinetic, elastic potential, gravitational potential, electric potential, chemical, and thermal energy. 6.PS3.2 Construct a scientific explanation of the transformations between potential and kinetic energy. 6.PS3.3 Analyze and interpret data to show the relationship between kinetic energy and the mass of an object in motion and its speed. 6.PS3.4 Conduct an investigation to demonstrate the way that heat (thermal energy) moves among objects through radiation, conduction, or convection. 6.ETS1.2 Design and test different solutions that impact energy transfer.	1. Asking Questions and Defining Problems 2. Developing and Using Models 3. Planning and carrying out controlled investigations 4. Analyzing and interpreting data 6. Constructing Explanations and Designing Solutions Crosscutting Concepts 2. Cause and Effect 3. Scale, Proportion, and Quantity 5. Energy and Matter

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Unit 2: Relationships Among Organisms [3 weeks]

Overarching Question(s)	Disciplinary Core Ideas	Standards	Science & Engineering Practices
<p>How do organisms interact with the living and nonliving environments to obtain matter and energy?</p> <p>How do matter and energy move through an ecosystem?</p> <p>How do organisms interact in groups so as to benefit individuals?</p>	<p>6.LS2: Ecosystems: Interactions, Energy, and Dynamics</p>	<p>6.LS2.1 Evaluate and communicate the impact of environmental variables on population size.</p> <p>6.LS2.2 Determine the impact of competitive, symbiotic, and predatory interactions in an ecosystem.</p> <p>6.LS2.3 Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.</p> <p>6.LS2.7 Compare and contrast auditory and visual methods of communication among organisms in relation to survival strategies of a population.</p>	<p>2. Developing and using models 4. Analyzing and interpreting data 7. Engaging in argument from evidence</p> <p>Crosscutting Concepts</p> <p>2. Cause and Effect 5. Energy and Matter 7. Stability and Change</p>

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Unit 3: Earth's Biomes and Ecosystems [6 weeks]

Overarching Question(s)	Disciplinary Core Ideas	Standards	Science & Engineering Practices
<p>What happens to ecosystems when the environment changes?</p> <p>What is biodiversity, how do humans affect it, and how does it affect humans?</p>	<p>6.LS2: Ecosystems: Interactions, Energy, and Dynamics</p> <p>6.LS4: Biological Change: Unity and Diversity</p> <p>6.ETS1: Engineering Design</p>	<p>6.LS2.4 Using evidence from climate data, draw conclusions about the patterns of abiotic and biotic factors in different biomes, specifically the tundra, taiga, deciduous forest, desert, grasslands, rainforest, marine, and freshwater ecosystems.</p> <p>6.LS2.5 Analyze existing evidence about the effect of a specific invasive species on native populations in Tennessee and design a solution to mitigate its impact.</p> <p>6.LS2.6 Research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes.</p> <p>6.LS4.1 Explain how changes in biodiversity would impact ecosystem stability and natural resources.</p> <p>6.LS4.2 Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equilibrium.</p> <p>6.ETS1.1 Evaluate design constraints on solutions for maintaining ecosystems and biodiversity.</p>	<p>1. Asking questions and defining problems</p> <p>2. Developing and using models</p> <p>7. Engaging in argument from evidence</p> <p>8. Obtaining, evaluating, and communicating information</p> <p>Crosscutting Concepts</p> <p>1. Patterns</p> <p>2. Cause and Effect</p> <p>4. Systems and System Models</p> <p>7. Stability and Change</p>

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Unit 4: Earth's Resources and Human Impact on the Environment [3 weeks]

Overarching Question(s)	Disciplinary Core Ideas	Standards	Science & Engineering Practices
<p>How do humans depend on Earth's resources?</p> <p>How do humans change the planet?</p>	<p>6.ESS3: Earth and Human Activity</p>	<p>6.ESS3.1 Differentiate between renewable and nonrenewable resources by asking questions about their availability and sustainability.</p> <p>6.ESS3.2 Investigate and compare existing and developing technologies that utilize renewable and alternative energy resources.</p> <p>6.ESS3.3 Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.</p>	<p>2. Developing and using models</p> <p>7. Engaging in argument from evidence</p> <p>8. Obtaining, evaluating, and communicating information</p> <p>Crosscutting Concepts</p> <p>2. Cause and Effect</p> <p>4. Systems and System Models</p> <p>5. Energy and Matter</p>

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Unit 5: Earth's Water [3 weeks]

Overarching Question(s)	Disciplinary Core Ideas	Standards	Science & Engineering Practices
<p>How do living organisms alter Earth's processes and structures?</p>	<p>6.ESS2: Earth's System</p>	<p>6.ESS2.4 Apply scientific principles to design a method to analyze and interpret the impact of humans and other organisms on the hydrologic cycle.</p>	<p>8. Obtaining, evaluating, and communicating information</p> <p>Crosscutting Concepts</p> <p>4. Systems and System Models</p>

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Unit 6: Earth's Systems [3 weeks]

Overarching Question(s)	Disciplinary Core Ideas	Standards	Science & Engineering Practices
<p>How do the properties and movements of water shape Earth's surface and affect its systems?</p>	<p>6.ESS2: Earth's Systems</p>	<p>6.ESS2.1 Gather evidence to justify that oceanic convection currents are caused by the sun's transfer of heat energy and differences in salt concentration leading to global water movement.</p> <p>6.ESS2.2 Diagram convection patterns that flow due to uneven heating of the earth.</p> <p>6.ESS2.3 Construct an explanation for how atmospheric flow, geographic features, and ocean currents affect the climate of a region through heat transfer.</p>	<p>2. Developing and using models 6. Constructing explanations and designing solutions 7. Engaging in argument from evidence</p> <p>Crosscutting Concepts</p> <p>2. Cause and Effect 5. Energy and Matter 7. Stability and Change</p>

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UNIT 7: Weather and Climate [9 weeks]

Overarching Question(s)	Disciplinary Core Ideas	Standards	Science & Engineering Practices
<p>What regulates weather and climate?</p>	<p>6.ESS2: Earth's Systems</p>	<p>Standards</p> <p>6.ESS2.3 Construct an explanation for how atmospheric flow, geographic features, and ocean currents affect the climate of a region through heat transfer.</p> <p>6.ESS2.5 Analyze and interpret data from weather conditions, weather maps, satellites, and radar to predict probable local weather patterns and conditions.</p> <p>6.ESS2.6 Explain how relationships between the movement and interactions of air masses, high and low pressure systems, and frontal boundaries result in weather conditions and severe storms.</p>	<p>Science & Engineering Practices</p> <p>2. Developing and Using Models 4. Analyzing and interpreting data 7. Engaging in argument from evidence</p> <p>Crosscutting Concepts</p> <p>2. Cause and Effect 4. Systems and system models 7. Stability and change</p>

