

<b>Select a Course:</b>	Science Grade 4
<b>Teacher:</b>	CORE Science Grade 4
<b>Course:</b>	Science Grade 4
<b>Year:</b>	2016-17
<b>Months:</b>	- All -

August

Enduring Understandings ✕ Essential Questions ✕ Standards ✕ Knowledge & Skills ✕ Academic Language ✕

**Plant and Animal Engineering** In this unit, students will learn and discover a framework for understanding the functions of plant and animal structures. 4-6 weeks

September

Enduring Understandings ✕ Essential Questions ✕ Standards ✕ Knowledge & Skills ✕ Academic Language ✕

**Cause and effect relationships are routinely identified in nature**

**A system can be described in terms of its components and their interactions.**

**Why do some organisms become endangered or extinct and others do not?**

**What is the relationship between an organisms habitat and its' adaptations?**

**How does a particular environment affect how a species looks or acts?**

**How do human affect and change plants and other animals?**

3-5.PS4.B - Electromagnetic radiation ~ Object can be seen when light reflected from their surface enters our eyes.

3-5.LS1.A - Structure and function ~ Organisms have both internal and external macroscopic structures that allow for growth, survival, behavior, and reproduction.

4-LS1.1 - Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

4-LS1.2 - Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

4-PS4.1 - Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.

4-PS4.2 - Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.

3-5.LS1.D - Information Processing ~ Different sense receptors are specialized for particular kinds of information; Animals use their perceptions and memories to guide their actions.

**What Plant Structures Are Used for Support and Growth.**

**What Plant Structures Are Used for Protection.**

**What Plant Structures Are Used for Reproduction.**

**How Plants Respond to Their Environment.**

**What Animal Structures Are Used for Digestion and Circulation.**

**What Animal Structures Are Used for Support, Movement, and Protection.**

**What Animal Structures Are Used for Reproduction.**

**What Animal Structures Are Used for Sensing the Environment.**

**How Do Animals Respond to Their Environment.**

**adaptation advantage characteristics chlorophyll classify fertilization germinate inherit instinct invertebrates photosynthesis pistil pollination sepal stamen stimulus vertebrates competition ecosystem extinct fossil habitat nonrenewable resources paleontologist population renewable resources**

				<ul style="list-style-type: none"> <li> Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen</li> <li> Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</li> <li> Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.</li> </ul>	
October	Enduring Understandings ✕	Essential Questions ✕	Standards ✕	Knowledge & Skills ✕	Academic Language ✕
November	Enduring Understandings ✕	Essential Questions ✕	Standards ✕	Knowledge & Skills ✕	Academic Language ✕
December	<p> <b>Energy</b> Students will be able to independently use their learning to: understand that energy is transferred and can change in various ways. recognize how energy can be transferred in various ways and between objects</p> <p>Energy: Waves and Light</p>				
	Enduring Understandings ✕	Essential Questions ✕	Standards ✕	Knowledge & Skills ✕	Academic Language ✕
	<ul style="list-style-type: none"> <li> Energy can be seen, heard, and felt</li> <li> Energy can be transferred (echo in sound)</li> <li> Energy and motion are related</li> </ul>	<ul style="list-style-type: none"> <li> How can energy be used to help the world?</li> <li> Where can we find energy and how does it work?</li> <li> How is energy useful?</li> </ul>	<p>4-PS3.1 - Use evidence to construct an explanation relating the speed of an object to the energy of that object.</p> <p>4-PS3.2 - Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p>4-PS3.3 - Ask questions and predict outcomes about the changes in energy that occur when objects collide.</p> <p>4-PS3.4 - Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*</p>	<ul style="list-style-type: none"> <li> Energy travels in waves</li> <li> There are different types of energy (sound, light, heat, elec.)</li> <li> the definition of Energy</li> <li> when objects collide energy is transferred from one object to another,</li> </ul>	<ul style="list-style-type: none"> <li> atoms</li> <li> to produce</li> <li> to conserve</li> <li> energy</li> <li> electric energy</li> </ul>

		<p>4-PS4.1 - Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.</p> <p>4-PS4.2 - Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.</p>		<p>thereby changing their motion.</p> <p>Energy cannot be destroyed it is only displaced</p> <p>the speed of a obj. relates to the energy</p> <p>Use evidence to construct an explanation relating the speed of an object to the energy of that object</p> <p>Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric current</p> <p>Ask questions and predict outcomes about the changes in energy that occur when objects collide</p> <p>Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</p> <p>The relationship between energy and forces</p> <p>How energy is produced</p> <p>How energy is conserved</p> <p>How energy is transferred</p> <p>How speed of an object relates to energy of that object.</p>	<p>heat energy</p> <p>to transfer</p> <p>transference</p> <p>waves</p> <p>longitudinal wave</p> <p>transparent</p> <p>translucent</p> <p>opaque</p> <p>to transmit</p> <p>to absorb</p> <p>to reflect</p> <p>to vibrate</p> <p>vibration</p> <p>ultrasound</p> <p>volume</p> <p>tone</p> <p>to amplify</p> <p>refraction</p> <p>echo</p> <p>light spectrum</p>
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February	Enduring Understandings ✕	Essential Questions ✕	Standards ✕	Knowledge & Skills ✕	Academic Language ✕
March	<p><b>Earth's Systems</b></p> <p>In this unit, students will discover evidence that Earth's surface changes over time, then describe the ways it changes, discuss additional evidence provided by fossils, and identify patterns of changes to the surface of Earth.</p>				
	Enduring Understandings ✕	Essential Questions ✕	Standards ✕	Knowledge & Skills ✕	Academic Language ✕
	<p><b>Patterns can be used as evidence to support an explanation in nature.</b></p> <p><b>Cause and effect relationships are routinely identified, tested, and used to explain change.</b></p> <p><b>Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed.</b></p> <p><b>Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.</b></p> <p><b>The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth</b></p> <p><b>Living things affect the physical characteristics of their regions.</b></p> <p><b>Testing a solution involves investigating how</b></p>	<p><b>How do fossils form?</b></p> <p><b>Why are mountains found all over the world?</b></p> <p><b>Why do some places on Earth have different colored layers?</b></p>	<p>4-ESS1.1 - Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</p> <p>4-ESS2.1 - Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</p> <p>4-ESS2.2 - Analyze and interpret data from maps to describe patterns of Earth's features.</p> <p>4-ESS3.2 - Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*</p> <p>3-5.ESS1.C - The history of planet Earth ~ Certain features on Earth can be used to order events that have occurred in a landscape.</p> <p>3-5.ESS2.A - Earth materials and systems ~ Four major Earth systems interact. Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, organisms, and gravity break rocks, soils, and sediments into smaller pieces and move them around.</p> <p>3-5.ESS2.B - Plate tectonics and large-scale system interactions ~ Earth's physical features occur in patterns, as do earthquakes and volcanoes. Maps can be used to locate features and determine patterns in those events.</p> <p>3-5.ESS2.E - Biogeology ~ Living things can affect the physical characteristics of their environment.</p> <p>3-5.ESS3.B - Natural hazards ~ A variety of hazards result from natural processes; humans cannot eliminate hazards but can reduce their impacts.</p> <p>3-5-ETS1.3 - Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p>	<p><b>How the earths surface shows clues of change.</b></p> <p><b>How water changes the earths surface.</b></p> <p><b>How wind changes the earths surface.</b></p> <p><b>How living things change the earth's surface.</b></p> <p><b>How fossils form and what they show.</b></p> <p><b>Where on earth are earthquakes, volcanoes, and mountains found.</b></p> <p><b>What people can do about natural hazards.</b></p> <p><b>Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</b></p> <p><b>Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation</b></p> <p><b>Analyze and interpret data from maps to describe patterns of Earth's features.</b></p>	

	<p>well it performs under a range of likely conditions.</p> <p> A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.</p>			<p> Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans</p>	
April	<p><b>Enduring Understandings</b> ✕</p>	<p><b>Essential Questions</b> ✕</p>	<p><b>Standards</b></p>	<p>✕ <b>Knowledge &amp; Skills</b> ✕</p>	<p><b>Academic Language</b> ✕</p>
May	<p><b>Enduring Understandings</b> ✕</p>	<p><b>Essential Questions</b> ✕</p>	<p><b>Standards</b></p>	<p>✕ <b>Knowledge &amp; Skills</b> ✕</p>	<p><b>Academic Language</b> ✕</p>
June	<p><b>Enduring Understandings</b> ✕</p>	<p><b>Essential Questions</b> ✕</p>	<p><b>Standards</b></p>	<p>✕ <b>Knowledge &amp; Skills</b> ✕</p>	<p><b>Academic Language</b> ✕</p>
July	<p><b>Enduring Understandings</b> ✕</p>	<p><b>Essential Questions</b> ✕</p>	<p><b>Standards</b></p>	<p>✕ <b>Knowledge &amp; Skills</b> ✕</p>	<p><b>Academic Language</b> ✕</p>