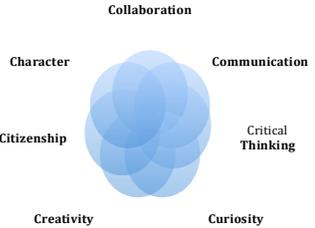


Content Area: Science	Course: Grade 4 Science	Grade Level: Fourth
	R14 The Seven Cs of Learning 	
Unit Titles	Length of Unit	
<ul style="list-style-type: none"> • Energy 	<ul style="list-style-type: none"> • 6-8 weeks 	
<ul style="list-style-type: none"> • Waves 	<ul style="list-style-type: none"> • 6-8 weeks 	
<ul style="list-style-type: none"> • Structure, Function, and Information Processing 	<ul style="list-style-type: none"> • 6-8 weeks 	
<ul style="list-style-type: none"> • Earth's Systems 	<ul style="list-style-type: none"> • 6-8 weeks 	



Strands	Course Level Expectations
Physical Sciences	<ul style="list-style-type: none"> • Use evidence to construct an explanation relating the speed of an object to the energy of that object • Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. • Ask questions and predict outcomes about the changes in energy that occur when objects collide. • Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. • Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move • Generate and compare multiple solutions that use patterns to transfer information. • Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.
Life Sciences	<ul style="list-style-type: none"> • Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. • 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
Earth and Space Sciences	<ul style="list-style-type: none"> • Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. • Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation • Analyze and interpret data from maps to describe patterns of Earth's features • Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

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Unit Title	Energy	Length of Unit	6-8 weeks
Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • What is energy and how is it related to motion? • How is energy transferred? • How does the speed of an object relate to the energy of that object? • How is energy converted from one form to another? • 		
Standards*	4-PS3-1, 4-PS3-2, 4-PS3-3, 4-PS3-4, 4-ESS3-1, ETS1-1, ETS1-3		
Unit Strands & Concepts	<p>DISCIPLINARY CORE IDEAS (DCI):</p> <ul style="list-style-type: none"> • Definitions of Energy • Conservation of Energy and Energy Transfer • Relationship Between Energy and Forces • Energy in Chemical Processes and Everyday Life • Natural Resources <p>Cross Cutting Concepts (CCC)</p> <ul style="list-style-type: none"> • Energy and Matter • Cause and Effect 		
Key Vocabulary	Energy, Speed, Renewable Energy Source, Electric Current, Data, Observations		

*Standards based on the Next Generation Science Standards (NGSS) and the National Research Council (NRC)
For more information visit: <http://portal.ct.gov/SDE/Science/Science-Standards-and-Resources>

Unit Title	Energy	Length of Unit	6-8 Weeks
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Critical Content: My students will Know...	Key Skills: My students will be able to (Do)...
<ul style="list-style-type: none"> • The faster a given object is moving, the more energy it possesses • Energy can be moved from place to place by moving objects or through sound, light, or electric currents • Energy is present whenever there are moving objects, sound, light, or heat. • When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced • Light also transfers energy from place to place • Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy • When objects collide, the contact forces transfer energy so as to change the objects' motions. • The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use. • Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. • Some resources are renewable over time, and others are not 	<ul style="list-style-type: none"> • Use evidence to construct an explanation relating the speed of an object to the energy of that object • Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents • Design, test, and refine a device that converts energy from one form to another • Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment.

Assessments:	Performance Task(s) focused on demonstrating an understanding of the relationship between speed and energy, energy transfer and conversion, and the effects of certain forms of energy on the environment
Teacher Resources:	NGSS Frameworks, Region 14 Science Implementation Guide, Model Based Inquiry Investigations, Foss Kits, NGSS Phenomenon Resources, Stem Teaching Tools

Unit Title	Waves	Length of Unit	6-8 weeks
Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • What are waves and what are some things they can do? 		
Standards	4-PS4-1, 4-PS4-3, ETS1-1, ETS1		
Unit Strands & Concepts	<p>DISCIPLINARY CORE IDEAS (DCI):</p> <ul style="list-style-type: none"> • Wave Properties • Information Technologies and Instrumentation <p>Cross Cutting Concepts (CCC)</p> <ul style="list-style-type: none"> • Patterns 		
	Waves, Amplitude, Wavelength, Motion, Data, Observations		

Unit Title	Waves	Length of Unit	6-8 weeks
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Critical Content: My students will Know...	Key Skills: My students will be able to (Do)...
<ul style="list-style-type: none"> • Waves, which are regular patterns of motion, can be made in water by disturbing the surface. • When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach • Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks). • Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa. 	<ul style="list-style-type: none"> • Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. • Generate and compare multiple solutions that use patterns to transfer information

Assessments:	Performance Task(s) focused on demonstrating an understanding of the structure of waves and waves and information transfer
Teacher Resources:	NGSS Frameworks, Region 14 Science Implementation Guide, Model Based Inquiry Investigations, Foss Kits, NGSS Phenomenon Resources, Stem Teaching Tools

Unit Title	Structure, Function, and Information Processing	Length of Unit	6-8 weeks
Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • How do internal and external structures support the survival, growth, behavior, and reproduction of plants and animals • How do animals process and respond to information through their senses? 		
Standards*	4-PS4-2, 4-LS1-1, 4-LS1-2, ETS1-1		
Unit Strands & Concepts	<p>DISCIPLINARY CORE IDEAS (DCI):</p> <ul style="list-style-type: none"> • Electromagnetic Radiation • Structure and Function • Information Processing <p>Cross Cutting Concepts (CCC)</p> <ul style="list-style-type: none"> • Systems and System Models • Cause and Effect 		
Key Vocabulary	Internal Structures, External Structures, Receptors, Senses, Stimuli, Data, Observations		

Unit Title	Structure, Function, and Information Processing	Length of Unit	6-8 weeks
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Critical Content: My students will Know...	Key Skills: My students will be able to (Do)...
<ul style="list-style-type: none"> • An object can be seen when light reflected from its surface enters the eyes • Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction • Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. • Animals are able to use their perceptions and memories to guide their actions 	<ul style="list-style-type: none"> • Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. • Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. • 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.

Assessments:	Performance Task(s) focused on demonstrating an understanding of how plants use external and internal structures, and how senses aid in the processing of stimuli, how the eye processes light
Teacher Resources:	NGSS Frameworks, Region 14 Science Implementation Guide, Model Based Inquiry Investigations, Foss Kits, NGSS Phenomenon Resources, Stem Teaching Tools

Unit Title	Earth's Systems	Length of Unit	6-8 weeks
Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • How can water, ice, wind and vegetation change the land? • What patterns of Earth's features can be determined with the use of maps? • How can rock formations and fossils tell the stories of change in landscape over time? 		
Standards*	4-ESS1-1, 4-ESS2-1 4-ESS2-2, 4-ESS3-2, 3-ESS3-1, ETS1-2		
Unit Strands & Concepts	<p>DISCIPLINARY CORE IDEAS (DCI):</p> <ul style="list-style-type: none"> • The History of Planet Earth • Earth Materials and Systems • Plate Tectonics and Large-Scale System Interactions • Biogeology • Natural Hazards <p>Cross Cutting Concepts (CCC)</p> <ul style="list-style-type: none"> • Patterns • Cause and Effect 		
Key Vocabulary	Rock Formations, Fossils, Weathering, Erosion, Topographical Map, Data, Observations		

Unit Title	Earth's Systems	Length of Unit	6-8 weeks
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Critical Content: My students will Know...	Key Skills: My students will be able to (Do)...
<ul style="list-style-type: none"> 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. 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 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. Living things affect the physical characteristics of their regions. variety of hazards result from natural processes (Humans cannot eliminate the hazards but can take steps to reduce their impacts. 	<ul style="list-style-type: none"> Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation Analyze and interpret data from maps to describe patterns of Earth's features. Design, test, and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

Assessments:	Performance Task(s) focused on demonstrating an understanding of how fossil evidence can be used in gaining information about the history of Earth, the effects of weathering and erosion, reducing the impacts of Earth's natural processes on humans
Teacher Resources:	NGSS Frameworks, Region 14 Science Implementation Guide, Model Based Inquiry Investigations, Foss Kits, NGSS Phenomenon Resources, Stem Teaching Tools