	CURRICULUM *End Product of Learning, "What You Teach"*		INSTRUCTION *Means to the End Product of Learning, "What You Teach"*		TECHNOLOGY *Means to Engage Students and Provide Practice*	INTERVENTION and ASSESSMENT
	CONTENT **What we want students to "KNOW"**	**SKILL** **What we want students to "DO"**	**LEARNING RESOURCES**	**TEACHING STRATEGIES**	**SOFTWARE and ONLINE Sites**	**Varied Classroom Assessment Strategies**
Quarter 1	**CORE IDEAS** **PS3.A Definitions of Energy** The faster a given object is moving, the more energy it possesses. **SCIENCE and ENGINEERING PRACTICES** **Constructing Explanations and Designing Solutions** Use evidence (e.g., measurements, observations, patterns) to construct and explanation **CROSSCUTTING CONCEPTS** **Energy and Matter** Energy can be transferred in various ways and between objects.	**PERFORMANCE EXPECTATION** **4-PS3-1** Use evidence to construct an explanation relating to the speed of an object to the energy of the object.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Electric Circuits Unit Lessons 1-9** **SUBCONCEPT 1 –** A complete circuit is required to light a lightbulb. **Lessons 1-6** **SUBCONCEPT 2 –** Different materials can behave as conductors or insulators. **Lesson 7** **SUBCONCEPT 4 –** Conductors are needed to complete an electric circuit **Lesson 9** *-Inquiry Investigations* *-STC Literacy Series Reading Selections* *-Science Notebooking* *-Student Investigation Guides* *-Hands-on Equipment* *-Creating Models* **Tigtag** www.tigtagcarolina.com **Speed/Energy** ***Carolina™* Science Magnifier** ***Energy pp. 256-263; Forces and Motion***	***Smithsonian Science and Technology Concepts™*** **Integrated FERA Cycle Instruction of** Crosscutting concepts and science and engineering practices with science core ideas **FOCUS Strategies include:** -pre-teaching activities such as brainstorming, KWL charts, anticipation guides, etc. -guiding/focus questions **EXPLORE Strategies include:** -inquiry-based discussions and investigations -classroom activities, inquiries and models to help students develop a further understanding of the concepts/core ideas being discussed **REFLECT Strategies include:** -Science Notebooking -Key Ideas -Academic Vocabulary **APPLY Strategies include:** -Venn diagrams, cause and effect charts, review games, engineering application lessons, etc. **COMMON CORE** **Reading Informational Text RI.1-9:** RI.1-3 Key Ideas and Details RI.4-6 Craft and Structure RI.7-9 Integration of Knowledge and Ideas **Writing W.1-9** W.1-3 Text Types and Purpose W.4-6 Production and Distribution of Writing W.7-9 Research to Build and Present Knowledge **GUIDING QUESTIONS** *-How does energy move from place to place?* *-When is energy present?* *-What happens when objects collide?*	**RESOURCES:** www.carolinascienceonline.com • Interactive Whiteboard Activities • STC Literacy Series • Electric Circuits www.tigtagcarolina.com • Video Sets related to Energy, Heat, Sound, Light, Conversion www.mysi.edu Smithsonian information website **DEVICES:** • iPads • Tablets • Chromebooks • ELMO • SMARTboard **SOFTWARE:** • Microsoft Powerpoint • Microsoft Word • SMARTboard activities	**INTERVENTIONS:** ***Smithsonian Science and Technology Concepts™*** • Science Notebooks • Extensions **ASSESSMENTS:** ***Smithsonian Science and Technology Concepts™*** Electric Circuits Unit **Lesson 1 Pre-Assessment** *Students discuss what they know and would like to know about electric circuits.* **Lesson 17 Assessment** *Students discuss and reflect on what they have learned* *-FORMATIVE* *-SUMMATIVE* **Science Notebooks** **Inquiry Data Sheets** **Investigation Follow-up Questions**
	CORE IDEAS **PS3.A Definitions of Energy** Energy can be moved from place to place by moving objects or through sound, light, or electric currents **PS3.B Conservation of Energy and Energy Transfer** 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. **SCIENCE and ENGINEERING PRACTICES** **Planning and Carrying Out Investigations** Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. **CROSSCUTTING CONCEPTS** **Energy and Matter** Energy can be transferred in various ways and between objects.	**PERFORMANCE EXPECTATION** **4-PS3-2** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and/or electric currents.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Electric Circuits Unit Lessons 8; 10-17** **SUBCONCEPT 3 –** Electricity in circuits produces a magnetic field and can be used to produce light and heat. **Lesson 8** **SUBCONCEPT 5 –** Different circuit components can be added and arranged in different ways to produce different results, and construct a variety of electrical devices and systems. **Lessons 10-17** **Tigtag** www.tigtagcarolina.com **Light, Sound, Heat, Energy** **TWIG** www.twigcarolina.com **Energy and Radioactivity** ***Carolina™* Science Magnifier** ***Energy pp. 256-263***			

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Quarter 1 cont…	**CORE IDEAS** **PS3.B Conservation of Energy and Energy Transfer** Energy can also be transferred from place to place by electrical currents, which can then be used to locally produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming energy of motion into electrical current. **SCIENCE and ENGINEERING PRACTICES** **Constructing Explanations and Designing Solutions** Use evidence (e.g., measurements, observations, patterns) to construct and explanation **CROSSCUTTING CONCEPTS** **Energy and Matter** Energy can be transferred in various ways and between objects.	**PERFORMANCE EXPECTATION** **4-PS3-2** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and/or electric currents. **4-PS3-4** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Electric Circuits Unit Lessons 8; 10-17** **SUBCONCEPT 3 –** Electricity in circuits produces a magnetic field and can be used to produce light and heat. **Lesson 8** **SUBCONCEPT 5 –** Different circuit components can be added and arranged in different ways to produce different results, and construct a variety of electrical devices and systems. **Lessons 10-17** **Tigtag** www.tigtagcarolina.com **Light, Sound, Heat, Energy** **TWIG** www.twigcarolina.com **Energy and Radioactivity** ***Carolina™* Science Magnifier** ***Energy pp. 266-281; Sound pp. 282-291; Heat pp. 292-301; Light 302-311***	***Smithsonian Science and Technology Concepts™*** **Integrated FERA Cycle Instruction of** Crosscutting concepts and science and engineering practices with science core ideas **FOCUS Strategies include:** -pre-teaching activities such as brainstorming, KWL charts, anticipation guides, etc. -guiding/focus questions **EXPLORE Strategies include:** -inquiry-based discussions and investigations -classroom activities, inquiries and models to help students develop a further understanding of the concepts/core ideas being discussed **REFLECT Strategies include:** -Science Notebooking -Key Ideas -Academic Vocabulary **APPLY Strategies include:** -Venn diagrams, cause and effect charts, review games, engineering application lessons, etc. **COMMON CORE** **Reading Informational Text RI.1-9:** RI.1-3 Key Ideas and Details RI.4-6 Craft and Structure RI.7-9 Integration of Knowledge and Ideas **Writing W.1-9** W.1-3 Text Types and Purpose W.4-6 Production and Distribution of Writing W.7-9 Research to Build and Present Knowledge **GUIDING QUESTIONS** *-What happens when objects collide?* *-How can we apply our understanding of energy transfer to design problems?*	**RESOURCES:** www.carolinascienceonline.com • Interactive Whiteboard Activities • STC Literacy Series • Electric Circuits www.tigtagcarolina.com • Video Sets related to Energy, Heat, Sound, Light, Conversion www.mysi.edu Smithsonian information website **DEVICES:** • iPads • Tablets • Chromebooks • ELMO • SMARTboard **SOFTWARE:** • Microsoft Powerpoint • Microsoft Word • SMARTboard activities	**INTERVENTIONS:** ***Smithsonian Science and Technology Concepts™*** • Science Notebooks • Extensions **ASSESSMENTS:** ***Smithsonian Science and Technology Concepts™*** Electric Circuits Unit **Lesson 1 Pre-Assessment** *Students discuss what they know and would like to know about electric circuits.* **Lesson 17 Assessment** *Students discuss and reflect on what they have learned* *-FORMATIVE* *-SUMMATIVE* **Science Notebooks** **Inquiry Data Sheets** **Investigation Follow-up Questions**
	CORE IDEAS **PS3.A Definitions of Energy** Energy can be moved from place to place by moving objects or through sound, light, or electric currents **PS3.B Conservation of Energy and Energy Transfer** 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. **PS3.C Relationship Between Energy and Forces** When objects collide, the contact forces transfer energy so as to change the objects' motions. **SCIENCE and ENGINEERING PRACTICES** **Asking Questions and Defining Problems** Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.. **CROSSCUTTING CONCEPTS** **Energy and Matter** Energy can be transferred in various ways and between objects.	**PERFORMANCE EXPECTATION** **4-PS3-3** Ask questions and predict outcomes about the change in energy that occur when objects collide.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Electric Circuits Unit Lessons 8; 10-17** **SUBCONCEPT 3 –** Electricity in circuits produces a magnetic field and can be used to produce light and heat. **Lesson 8** **SUBCONCEPT 5 –** Different circuit components can be added and arranged in different ways to produce different results, and construct a variety of electrical devices and systems. **Lessons 10-17** **Tigtag** www.tigtagcarolina.com **Conversions** **TWIG** www.twigcarolina.com **Energy and Radioactivity** ***Carolina™* Science Magnifier** ***Energy pp. 266-311***			

Quarter 1 cont...

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CORE IDEAS **PS3.D Energy in Chemical Processes and Everyday Life** The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use. **SCIENCE and ENGINEERING PRACTICES** **Constructing Explanations and Designing Solutions** Apply scientific ideas to solve design problems **CROSSCUTTING CONCEPTS** **Energy and Matter** Energy can be transferred in various ways and between objects. **Influence of Science, Engineering, and Technology on Society and the Natural World** Engineers improve existing technologies or develop new ones. **Science is a Human Endeavor** Most scientists and engineers work in teams. Science affects everyday life.	**PERFORMANCE EXPECTATION** **4-PS3-4** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Electric Circuits Unit Lessons 8; 10-17** **SUBCONCEPT 3 –** Electricity in circuits produces a magnetic field and can be used to produce light and heat. **Lesson 8** **SUBCONCEPT 5 –** Different circuit components can be added and arranged in different ways to produce different results, and construct a variety of electrical devices and systems. **Lessons 10-17** **Tigtag** www.tigtagcarolina.com **Conversions** **TWIG** www.twigcarolina.com **Energy and Radioactivity** ***Carolina™* Science Magnifier** ***Energy pp. 266-311***	***Smithsonian Science and Technology Concepts™*** **Integrated FERA Cycle Instruction of** Crosscutting concepts and science and engineering practices with science core ideas **FOCUS Strategies include:** -pre-teaching activities such as brainstorming, KWL charts, anticipation guides, etc. -guiding/focus questions **EXPLORE Strategies include:** -inquiry-based discussions and investigations -classroom activities, inquiries and models to help students develop a further understanding of the concepts/core ideas being discussed **REFLECT Strategies include:** -Science Notebooking -Key Ideas -Academic Vocabulary **APPLY Strategies include:** -Venn diagrams, cause and effect charts, review games, engineering application lessons, etc. **COMMON CORE** **Reading Informational Text RI.1-9:** RI.1-3 Key Ideas and Details RI.4-6 Craft and Structure RI.7-9 Integration of Knowledge and Ideas **Writing W.1-9** W.1-3 Text Types and Purpose W.4-6 Production and Distribution of Writing W.7-9 Research to Build and Present Knowledge **GUIDING QUESTIONS** *-Why is the expression "produce energy" misleading?*	**RESOURCES:** www.carolinascienceonline.com • Interactive Whiteboard Activities • STC Literacy Series • Electric Circuits www.tigtagcarolina.com • Video Sets related to Energy, Heat, Sound, Light, Conversion www.mysi.edu Smithsonian information website **DEVICES:** • iPads • Tablets • Chromebooks • ELMO • SMARTboard **SOFTWARE:** • Microsoft Powerpoint • Microsoft Word • SMARTboard activities	**INTERVENTIONS:** ***Smithsonian Science and Technology Concepts™*** • Science Notebooks • Extensions **ASSESSMENTS:** ***Smithsonian Science and Technology Concepts™*** Electric Circuits Unit **Lesson 1 Pre-Assessment** *Students discuss what they know and would like to know about electric circuits.* **Lesson 17 Assessment** *Students discuss and reflect on what they have learned* *-FORMATIVE* *-SUMMATIVE* **Science Notebooks** **Inquiry Data Sheets** **Investigation Follow-up Questions**

Quarter 2

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CORE IDEAS **PS4.A Wave Properties** Waves, which are regular patterns of motion can be made by water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; it does not move in the direction of the wave except when the water meets the beach. Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks). **SCIENCE and ENGINEERING PRACTICES** **Developing and Using Models** Develop a model using an analogy, example, or abstract representation to describe a scientific principal. **Scientific Knowledge is Based on Empirical Evidence** Science findings are based on recognizable patterns. **CROSSCUTTING CONCEPTS** **Patterns** Similarities and differences in patterns can be used to sort and classify natural phenomena.	**PERFORMANCE EXPECTATION** **4-PS4-1** Develop a model of waves to describe the patterns in terms of amplitude and wavelength and that waves can cause objects to move.	**RESOURCES:** ***Carolina™* EnergyWorks! Unit Lessons 7-9** **SUBCONCEPT 2 –**As part of its life cycle, the butterfly emerges from a chrysalis **Lessons 7-9** **SUBCONCEPT 4 –**Scientists use data on organisms' structures and life cycles to understand and classify living things **Lessons 13-16** **Tigtag** www.tigtagcarolina.com **Coastal Wave Processes; Waves** **TWIG** www.twigcarolina.com **Waves**	***Carolina Building Blocks of Science™*** **Integrated FERA Cycle Instruction of** Crosscutting concepts and science and engineering practices with science core ideas **FOCUS Strategies include:** -pre-teaching activities such as brainstorming, KWL charts, anticipation guides, etc. -guiding/focus questions **EXPLORE Strategies include:** -inquiry-based discussions and investigations -classroom activities, inquiries and models to help students develop a further understanding of the concepts/core ideas being discussed **REFLECT Strategies include:** -Science Notebooking -Key Ideas -Academic Vocabulary **APPLY Strategies include:** -Venn diagrams, cause and effect charts, review games, engineering application lessons, etc. **COMMON CORE** **Reading Informational Text RI.1-9:** RI.1-3 Key Ideas and Details RI.4-6 Craft and Structure RI.7-9 Integration of Knowledge and Ideas **Writing W.1-9** W.1-3 Text Types and Purpose W.4-6 Production and Distribution of Writing W.7-9 Research to Build and Present Knowledge **GUIDING QUESTIONS** *-How do waves move?* *-How do waves differ?* *-How do humans use resources from their environment? What are the impacts of using these natural resources?*	**RESOURCES:** www.carolinascienceonline.com • EnergyWorks! www.tigtagcarolina.com • Video Sets related to waves; coastal waves; fiber optics; computers; cell phones www.mysi.edu Smithsonian information website **DEVICES:** • iPads • Tablets • Chromebooks • ELMO • SMARTboard **SOFTWARE:** • Microsoft Powerpoint • Microsoft Word • SMARTboard activities	**INTERVENTIONS:** ***EnergyWorks!™*** • Science Notebooks • Extensions **ASSESSMENTS:** ***Carolina™*** EnergyWorks! Unit **Lesson 1 Pre-Assessment** *Students discuss what they know about caterpillars and butterflies* **Lesson 16 Assessment** *Students discuss and reflect on what they have learned* *-FORMATIVE* *-SUMMATIVE* **Science Notebooks** **Inquiry Data Sheets** **Investigation Follow-up Questions**
CORE IDEAS **PS4.C Information Technologies and Instrumentation** Digitized information transmitted over long distances without significant degradation. High-tech devices such as computers or cell phones can decode information – convert it from digitized form to voice – and vice versa. **ETS1.C Optimizing The Design Solution** Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. **SCIENCE and ENGINEERING PRACTICES** **Constructing Explanations and Designing Solutions** Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution **CROSSCUTTING CONCEPTS** **Patterns** Similarities and differences in patterns can be used to sort and classify designed products. **Interdependence of Science, Engineering, and Technology** Knowledge of relevant scientific concepts and research findings is important in engineering.	**PERFORMANCE EXPECTATION** **4-PS4-3** Generate and compare multiple solutions that use patterns to transfer information.	**RESOURCES:** ***Carolina™* EnergyWorks! Unit Lessons 7-9** **SUBCONCEPT 2 –**As part of its life cycle, the butterfly emerges from a chrysalis **Lessons 7-9** **SUBCONCEPT 4 –**Scientists use data on organisms' structures and life cycles to understand and classify living things **Lessons 13-16** **Tigtag** www.tigtagcarolina.com **How Do Cell Phones Work?; Computers; The Use of Silicon; Fiber Optics**			

Quarter 3

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CORE IDEAS **ESS1.C The History of Planet Earth** 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. **SCIENCE and ENGINEERING PRACTICES** **Constructing Explanations and Designing Solutions** Identify the evidence that supports particular points in an explanation. **CROSSCUTTING CONCEPTS** **Patterns** Patterns can be used as evidence to support an explanation. **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** Science assumes consistent pattern in natural systems.	**PERFORMANCE EXPECTATION** **4-ESS1-1** Identify evidence from pattern in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Rocks and Minerals Unit** **Lessons 1-4; 16-17** **SUBCONCEPT 1 –**Rocks are formed by a variety of processes and are always changing **Lessons 1-3** **SUBCONCEPT 2 –**Rocks are aggregates of minerals. **Lesson 4** **SUBCONCEPT 5 –**The properties of rocks and minerals determine how they are used. **Lessons 16-17** *-Inquiry Investigations* *-STC Literacy Series Reading Selections* *-Science Notebooking* *-Student Investigation Guides* *-Hands-on Equipment* *-Creating Models* **TWIG** www.twigcarolina.com **Fossils; Geology** ***Carolina™* Science Magnifier** ***The Rock Cycle pp. 170-175; Fossils pp. 176-185***	***Smithsonian Science and Technology Concepts™*** **Integrated FERA Cycle Instruction of** Crosscutting concepts and science and engineering practices with science core ideas **FOCUS Strategies include:** -pre-teaching activities such as brainstorming, KWL charts, anticipation guides, etc. -guiding/focus questions **EXPLORE Strategies include:** -inquiry-based discussions and investigations -classroom activities, inquiries and models to help students develop a further understanding of the concepts/core ideas being discussed **REFLECT Strategies include:** -Science Notebooking -Key Ideas -Academic Vocabulary **APPLY Strategies include:** -Venn diagrams, cause and effect charts, review games, engineering application lessons, etc. **COMMON CORE** **Reading Informational Text RI.1-9:** RI.1-3 Key Ideas and Details RI.4-6 Craft and Structure RI.7-9 Integration of Knowledge and Ideas **Writing W.1-9** W.1-3 Text Types and Purpose W.4-6 Production and Distribution of Writing W.7-9 Research to Build and Present Knowledge **GUIDING QUESTIONS** *-What evidence of a changing earth can we find by looking carefully at patterns of rock formation and the fossil record?* *-How do forces shape the earth?*	**RESOURCES:** www.carolinascienceonline.com • Interactive Whiteboard Activities • STC Literacy Series Rocks and Minerals www.TWIGcarolina.com • Fossils; Weathering, Rocks www.mysi.edu Smithsonian information website **DEVICES:** • iPads • Tablets • Chromebooks • ELMO • SMARTboard **SOFTWARE:** • Microsoft Powerpoint • Microsoft Word • SMARTboard activities	**INTERVENTIONS:** ***Smithsonian Science and Technology Concepts™*** • Science Notebooks • Extensions **ASSESSMENTS:** ***Smithsonian Science and Technology Concepts™*** Rocks and Minerals Unit **Lesson 1 Pre-Assessment** *Students explore three rocks and discuss what they know and would like to know about rocks.* **Lesson 16 Assessment** *Students discuss and reflect on what they have learned* *-FORMATIVE* *-SUMMATIVE* **Science Notebooks** **Inquiry Data Sheets** **Investigation Follow-up Questions**
CORE IDEAS **ESS2.A Earth Materials and Systems** 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 around them. **ESS2.E Biogeology** Living things affect the physical characteristics of their regions. **SCIENCE and ENGINEERING PRACTICES** **Planning and Carrying Out Investigations** Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. **CROSSCUTTING CONCEPTS** **Cause and Effect** Cause and effect relationships are routinely identified, tested, and used to explain change.	**PERFORMANCE EXPECTATION** **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.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Rocks and Minerals Unit** **Lessons 1-4** **SUBCONCEPT 1 –**Rocks are formed by a variety of processes and are always changing **Lessons 1-3** **SUBCONCEPT 2 –**Rocks are aggregates of minerals. **Lesson 4** **TWIG** www.twigcarolina.com **Weathering; Geology** ***Carolina™* Science Magnifier** ***Earth's Landforms pp. 154-161***			

Quarter 3 cont…

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CORE IDEAS **ESS2.B Plate Tectonics and Large Scale System Interactions** The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earth quakes 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 of Earth. **SCIENCE and ENGINEERING PRACTICES** **Analyzing and Interpreting Data** Analyze and interpret data to make sense of phenomena using logical reasoning. **CROSSCUTTING CONCEPTS** **Patterns** Patterns can be used as evidence to support an explanation	**PERFORMANCE EXPECTATION** **4-ESS2-2** Analyze and interpret data from maps to describe patterns of Earth's features.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Rocks and Minerals Unit** **Lessons 1-4; 5-12; 16-17** **SUBCONCEPT 1 –**Rocks are formed by a variety of processes and are always changing **Lessons 1-3** **SUBCONCEPT 2 –**Rocks are aggregates of minerals. **Lesson 4** **SUBCONCEPT 3 –**Minerals have distinctive properties that may be identified by testing. **Lessons 5-12** **SUBCONCEPT 5 –**The properties of rocks and minerals determine how they are used. **Lessons 16-17** *-Inquiry Investigations* *-STC Literacy Series Reading Selections* *-Science Notebooking* *-Student Investigation Guides* *-Hands-on Equipment* *-Creating Models* **TWIG** www.twigcarolina.com **Plate Tectonics; Earth's Structure** ***Carolina™* Science Magnifier** ***Maps pp. 344-349***	***Smithsonian Science and Technology Concepts™*** **Integrated FERA Cycle Instruction of** Crosscutting concepts and science and engineering practices with science core ideas **FOCUS Strategies include:** -pre-teaching activities such as brainstorming, KWL charts, anticipation guides, etc. -guiding/focus questions **EXPLORE Strategies include:** -inquiry-based discussions and investigations -classroom activities, inquiries and models to help students develop a further understanding of the concepts/core ideas being discussed **REFLECT Strategies include:** -Science Notebooking -Key Ideas -Academic Vocabulary **APPLY Strategies include:** -Venn diagrams, cause and effect charts, review games, engineering application lessons, etc. **COMMON CORE** **Reading Informational Text RI.1-9:** RI.1-3 Key Ideas and Details RI.4-6 Craft and Structure RI.7-9 Integration of Knowledge and Ideas **Writing W.1-9** W.1-3 Text Types and Purpose W.4-6 Production and Distribution of Writing W.7-9 Research to Build and Present Knowledge **GUIDING QUESTIONS** *-What patterns can we discover by looking at the location of mountain ranges, ocean trenches, earthquakes, and volcanoes?* *-What steps can humans take to reduce the impact of natural hazards?*	**RESOURCES:** www.carolinascienceonline.com • Interactive Whiteboard Activities • STC Literacy Series Rocks and Minerals www.tigtagcarolina.com • Plate Tectonics; Earthquakes; Natural Hazards; Tsunami www.mysi.edu Smithsonian information website **DEVICES:** • iPads • Tablets • Chromebooks • ELMO • SMARTboard **SOFTWARE:** • Microsoft Powerpoint • Microsoft Word • SMARTboard activities	**INTERVENTIONS:** ***Smithsonian Science and Technology Concepts™*** • Science Notebooks • Extensions **ASSESSMENTS:** ***Smithsonian Science and Technology Concepts™*** Rocks and Minerals Unit **Lesson 1 Pre-Assessment** *Students explore three rocks and discuss what they know and would like to know about rocks.* **Lesson 16 Assessment** *Students discuss and reflect on what they have learned* *-FORMATIVE* *-SUMMATIVE* **Science Notebooks** **Inquiry Data Sheets** **Investigation Follow-up Questions**
CORE IDEAS **ESS3.B Natural Hazards** 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. **SCIENCE and ENGINEERING PRACTICES** **Constructing Explanations and Designing Solutions** Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. **CROSSCUTTING CONCEPTS** **Cause and Effect** Cause and effect relationships are routinely identified, tested, and used to explain change. **Influence of Engineering, Technology, and Science on Society and the Natural World** Engineers improve existing technologies or develop new ones to increase known risks, and to meet societal demands.	**PERFORMANCE EXPECTATION** **4-ESS2-2** Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Rocks and Minerals Unit** **Lessons 1-4** **SUBCONCEPT 1 –**Rocks are formed by a variety of processes and are always changing **Lessons 1-3** **SUBCONCEPT 2 –**Rocks are aggregates of minerals. **Lesson 4** *-Inquiry Investigations* *-STC Literacy Series Reading Selections* *-Science Notebooking* *-Student Investigation Guides* **TWIG** www.twigcarolina.com **What is an Earthquake?; Natural Hazards; Tsunami; Volcanic Eruptions** ***Carolina™* Science Magnifier** ***Earthquakes pp. xx-x***			

Quarter 4

CURRICULUM *End Product of Learning, "What You Teach"*		**INSTRUCTION** *Means to the End Product of Learning, "What You Teach"*		**TECHNOLOGY** *Means to Engage Students and Provide Practice*	**INTERVENTION and ASSESSMENT**
CONTENT **What we want students to "KNOW"**	**SKILL** **What we want students to "DO"**	**LEARNING RESOURCES**	**TEACHING STRATEGIES**	**SOFTWARE and ONLINE Sites**	**Varied Classroom Assessment Strategies**
CORE IDEAS **PS4.B Electromagnetic Radiation** An object can be seen when light reflected from its surface enters the eyes. **SCIENCE and ENGINEERING PRACTICES** **Developing and Using Models** Use models and tools to describe phenomena. **CROSSCUTTING CONCEPTS** **Cause and Effect** Cause and effect relationships are routinely identified.	**PERFORMANCE EXPECTATION** **4-PS4-2** Use microscopes to describe that light reflecting from objects (microorganisms) and entering the eye allows them to be seen.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Microworlds Unit Lessons 1-10** **SUBCONCEPT 1 –**Observation gives us relevant information about an object. Magnifiers allow us to observe in greater detail. **Lessons 1-4** **SUBCONCEPT 2 –**A microscope is one type of magnifying tool. Each part of the microscope has a specific function. **Lessons 5-10** *-Inquiry Investigations* *-STC Literacy Series Reading Selections* *-Science Notebooking* *-Hands-on Equipment* *-Creating Models* **TWIG** www.twigcarolina.com **The Cell** ***Carolina™* Science Magnifier** **Cells**	***Smithsonian Science and Technology Concepts™*** **Integrated FERA Cycle Instruction of** Crosscutting concepts and science and engineering practices with science core ideas **FOCUS Strategies include:** -pre-teaching activities such as brainstorming, KWL charts, anticipation guides, etc. -guiding/focus questions **EXPLORE Strategies include:** -inquiry-based discussions and investigations -classroom activities, inquiries and models to help students develop a further understanding of the concepts/core ideas being discussed **REFLECT Strategies include:** -Science Notebooking -Key Ideas -Academic Vocabulary **APPLY Strategies include:** -Venn diagrams, cause and effect charts, review games, engineering application lessons, etc. **COMMON CORE** **Reading Informational Text RI.1-9:** RI.1-3 Key Ideas and Details RI.4-6 Craft and Structure RI.7-9 Integration of Knowledge and Ideas **Writing W.1-9** W.1-3 Text Types and Purpose W.4-6 Production and Distribution of Writing W.7-9 Research to Build and Present Knowledge **GUIDING QUESTIONS** *-What role do internal and external structures in animals (cells) play in growth and survival?*	**RESOURCES:** www.carolinascienceonline.com • Interactive Whiteboard Activities • STC Literacy Series Microworlds www.tigtagcarolina.com • Video Sets related to cells; plants and animals www.mysi.edu Smithsonian information website **DEVICES:** • iPads • Tablets • Chromebooks • ELMO • SMARTboard **SOFTWARE:** • Microsoft Powerpoint • Microsoft Word • SMARTboard activities	**INTERVENTIONS:** ***Smithsonian Science and Technology Concepts™*** • Science Notebooks • Extensions **ASSESSMENTS:** ***Smithsonian Science and Technology Concepts™*** Microworlds Unit **Lesson 1 Pre-Assessment** *Students discuss what they know and like to know about making observations.* **Lesson 17 Assessment** *Students discuss and reflect on what they have learned* *-FORMATIVE* *-SUMMATIVE* **Science Notebooks** **Inquiry Data Sheets** **Investigation Follow-up Questions**
CORE IDEAS **LS1.A Structure and Function** Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. All living things are comprised of cells, the fundamental unit of life. Cells have structures that help them survive in specific environmental conditions. **SCIENCE and ENGINEERING PRACTICES** **Developing and Using Models** Use models and tools to test interactions concerning the functioning of a natural system. **CROSSCUTTING CONCEPTS** **Systems and System Models** A system can be described in terms of its components and their interactions.	**PERFORMANCE EXPECTATION** **4-LS1-1** Construct an argument that plants and animals have internal and external structures (cells) that function to support survival, growth, and reproduction.	**RESOURCES:** ***Smithsonian Science and Technology Concepts™* Microworlds Unit Lessons 11-17** **SUBCONCEPT 3 –**Magnification reveals the cellular structure of living organisms. **Lessons 11-17** *-Inquiry Investigations* *-STC Literacy Series Reading Selections* *-Science Notebooking* *-Hands-on Equipment* *-Creating Models* **TWIG** www.twigcarolina.com **The Cell; Plants** ***Carolina™* Science Magnifier** ***Cells***			