North Carolina Science, Technology, and Engineering Standards Alignment

Grade 6

Forces and Motion

Standards	FOSS Alignment	Assessment
6.P.1 Understand the properties of waves and the wavelike property of energy in earthquakes, light and sound waves.		
6.P.1.1. Compare the properties of waves to the wavelike property of energy in earthquakes, light and sound.	**FOSS Next Generation Waves** *(Available Fall 2016)* Investigation 1: Make Waves Investigation 2: Wave Energy Investigation 3: Light Waves ***FOSS Science Resources*** *(student edition)*	I-Check 1 I-Check 2 I-Check 3 Survey/Posttest
	Delta Science Module Earth Processes Activity 8: Earthquake pp. 71-80 **Delta Science Reader Earth Processes** Plate Movements pp. 7-10	Unit Test
6.P.1.2. Explain the relationship among visible light, the electromagnetic spectrum, and sight.	**FOSS Next Generation Waves** *(Available Fall 2016)* Investigation 3: Light Waves Investigation 4: Wave Communication ***FOSS Science Resources*** *(student edition)*	I-Check 3 Survey/Posttest
6.P.1.3. Explain the relationship among the rate of vibration, the medium through which vibrations travel, sound and hearing.	**FOSS Next Generation Waves** *(Available Fall 2016)* Investigation 2: Wave Energy Investigation 4: Wave Communication ***FOSS Science Resources*** *(student edition)*	I-Check 2 Survey/Posttest

Grade 6

Matters: Properties and Change

Standards	FOSS Alignment	Assessment
6.P.2 Understand the structure, classifications and physical properties of matter.		
6.P.2.1. Recognize that all matter is made up of atoms and atoms of the same element are all alike, but are different from the atoms of other elements.	**Delta Science Content Reader Properties of Matter** What is matter made of? pp. 14-20	Reflect on Reading pp. 23 Apply Science Concepts pp. 23 Unit Test
6.P.2.2. Explain the effect of heat on the motion of atoms through a description of what happens to particles during a change in phase.	**Delta Science Content Reader Changes in Matter** What are physical changes? pp. 8-13	Reflect on Reading pp. 17 Apply Science Concepts pp. 17 Unit Test
6.P.2.3. Compare the physical properties of pure substances that are independent of the amount of matter present including density, melting point, boiling point, and solubility to properties that are dependent on the amount of matter present to include volume, mass and weight.	**Delta Science Content Reader Properties of Matter** What is matter? pp. 2-13	Apply Science Concepts pp. 13 Unit Test
	Delta Science Content Reader Changes in Matter What are physical changes? pp. 8-13	Unit Test

Grade 6

Energy: Conservation and Transfer

Standards	FOSS Alignment	Assessment
6.P.3 Understand characteristics of energy transfer and interactions of matter and energy.		
6.P.3.1. Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation and convection and the effects that may result.	**Delta Science Content Reader Heat and Light Energy** What is heat? pp. 2-9	
6.P.3.2. Explain the effects of electromagnetic waves on various materials to include absorption, scattering, and change in temperature.	**FOSS Next Generation Waves** *(Available Fall 2016)* Investigation 2: Wave Energy Investigation 3: Light Waves ***FOSS Science Resources*** *(student edition)*	I-Check 2 I-Check 3 Survey/Posttest
	Delta Science Content Reader Heat and Light Energy What is light? pp. 10-15	
6.P.3.3. Explain the suitability of materials for use in technological design based on a response to heat (to include conduction, expansion, and contraction) and electrical energy (conductors and insulators).	**FOSS Next Generation Waves** *(Available Fall 2016)* Investigation 2: Wave Energy Investigation 3: Light Waves Investigation 4: Wave Communication ***FOSS Science Resources*** *(student edition)*	PA: Investigation 2 Survey/Posttest
	Delta Science Content Reader Heat and Light Energy What kinds of technology use light? pp. 20-23	

Grade 6

Earth in the Universe

Standards	FOSS Alignment	Assessment
6.E.1 Understand the earth/moon/sun system, and the properties, structures and predictable motions of celestial bodies in the Universe.		
6.E.1.1. Explain how the relative motion and relative position of the sun, Earth and moon affect the seasons, tides, phases of the moon, and eclipses.	**FOSS Second Edition Planetary Science** Investigation 3: Seasons Part 1: Summer Heat pp. 126-144	**FQA**: Students answer in writing "Why is it hotter in the summer?" including their reasoning and evidence.
	FOSS Second Edition Planetary Science Investigation 3: Seasons Part 2: Day Length pp. 151-164	**PA**: Students diagram why day and night occur on earth and write an explanation
	FOSS Second Edition Planetary Science *FOSS Digital Media:* *"Seasons"* *FOSS Science Resources:* *"Seasons on Earth"*	**PA**: Students diagram and explain all factors that must be considered to understand why Earth has different seasons during a year.
	FOSS Second Edition Planetary Science Investigation 5: Phases of the Moon	
6.E.1.2. Explain why Earth sustains life while other planets do not based on their properties (including types of surface, atmosphere and gravitational force) and location to the Sun.	**FOSS Second Edition Planetary Science** Investigation 8: The Solar System Part 1: Where Are the Planets? pp. 358-364	**FQA**: Students apply proportional mathematics to solar system statistics to accurately calculate the sizes of the planets and their distances from the Sun.
	FOSS Second Edition Planetary Science Investigation 8: The Solar System Part 2: Comparing Temperatures and Atmospheres pp. 368-374 *FOSS Digital Media:* *"Jupiter's Atmosphere"* *"Search for Water"*	**FQA**: Students answer what planet is most like Earth and state their reasoning.
	FOSS Second Edition Planetary Science Investigation 8: The Solar System Part 3: Where is the Water pp. 378-384	**FQA:** Students use observations and comparisons of Earth landforms to provide evidence that water may have been present on other solar system objects.
6.E.1.3. Summarize space exploration and the understandings gained from them.	**FOSS Second Edition Planetary Science** Investigation 9: Space Exploration Part 1: Light Spectra pp. 398-405 *FOSS Science Resources:* *"Hunt for Water Using Spectra"*	**FQA**: Students compare space missions and identify key findings
	FOSS Second Edition Planetary Science Investigation 9:Space Exploration Part 2: Exploration of the Solar System pp. 411-405 *FOSS Science Resources:* *"Space Missions"*	

Grade 6

Earth in the Universe (cont.)

Standards	FOSS Alignment	Assessment
6.E.1 Understand the earth/moon/sun system, and the properties, structures and predictable motions of celestial bodies in the Universe.		
6.E.1.3. Summarize space exploration and the understandings gained from them.	**FOSS Second Edition Planetary Science** Investigation 10: Orbits and New Worlds Part 1: The Moons of Jupiter pp. 422-439 *FOSS Digital Media:* *"Galileo's Notes"*	
	FOSS Second Edition Planetary Science Investigation 10: Orbits and New Worlds Part 2: Looking for Planets pp. 444-451 *FOSS Science Resources:* *"Finding Planets Outside the Solar System"* *FOSS Digital Media:* *"Exoplanet Transit Hunt"* *"Orrery Video 1"* *"Orrery Video 2"*	

Grade 6

Earth Systems, Structures and Processes

Standards	FOSS Alignment	Assessment
6.E.2 Understand the structure of the earth and how interactions of constructive and destructive forces have resulted in changes in the surface of the Earth over time and the effects of the lithosphere on humans.		
6.E.2.1. Summarize the structure of the earth, including the layers, the mantle and core based on the relative position, composition and density.	**Delta Science Module Earth Processes** Activity 1 pp. 9-20 Activity 2 pp. 23-27	Students label the parts of the Earth in a diagram and write a brief description of each layer.
	Delta Science Module Earth Processes Activity 11 pp. 97-102	Students define *isostasy* based on their observations.
	Delta Science Reader Earth Processes What is Inside Earth? pp. 2-3	End of Unit Test: Earth Processes
6.E.2.2. Explain how crustal plates and ocean basins are formed, move and interact using earthquakes, heat flow and volcanoes to reflect forces within the earth.	**Delta Science Module Earth Processes** Activity 7 pp. 63-70 Activity 8 pp. 71-78	Students summarize what happens when an earthquake occurs.
	Delta Science Module Earth Processes Activity 9 pp. 81-86 Activity 10 pp. 89-95	Students report on the locations of earthquakes and volcanoes in relation to each other and describe their pattern of distribution.
	Delta Science Module Earth Processes Activity 11 pp. 97-103 Activity 12 pp. 105-108 Activity 13 pp. 111-119	Students describe the connection between sea-floor spreading and subduction.
	Delta Science Module Earth Processes Activity 14 pp. 121-129	Assessment - Section 1, Parts A and B; Section 2, Parts A and B, Section 3, Parts A and B
	Delta Science Reader Earth Processes How Has the Earth's Surface Changed Over Time? pp. 4-6 Plate Movements pp. 7-10	End of Unit Test: Earth Processes
6.E.2.3. Explain how the formation of soil is related to the parent rock type and the environment in which it develops.	**Delta Science Module Earth Processes** Activity 3 pp. 29-37	Students explain the connection between Earth's crust, rocks, weathering, and soil.
	Delta Science Module Earth Processes Activity 4 pp. 39-44 Activity 5 pp. 47-53 Activity 6 pp. 55-62	Students explain differences they observe between sedimentary and igneous rocks and how each is formed.
	Delta Science Reader Earth Processes Weathering, Erosion, and Deposition pp. 4-6 Plate Movements pp. 11-15 How Do Rocks and Soil Form? pp. 16-20	End of Unit Test: Earth Processes

Grade 6

Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
6.E.2 Understand the structure of the earth and how interactions of constructive and destructive forces have resulted in changes in the surface of the Earth over time and the effects of the lithosphere on humans.		
6.E.2.4. Conclude that the good health of humans requires: monitoring the lithosphere, maintaining soil quality and stewardship.	**Delta Science Module Earth Processes** Activity 8: Science, Technology, and Society pp. 79 Activity 11: Science, Technology, and Society pp. 103 Activity 14: Science, Technology, and Society p. 129 **Delta Science Reader Earth Processes** Conserving Soil pp. 20	

Grade 6

Structures and Functions of Living Organisms

Standards	FOSS Alignment	Assessment
6.L.1 Understand the structures, processes and behaviors of plants that enable them to survive and reproduce.		
6.L.1.1. Summarize the basic structures and functions of flowering plants required for survival, reproduction and defense.	**Delta Science Reader Plants in Our World** "What is a plant?" pp. 2 "How do plants grow, survive, and reproduce?" pp. 3-8	Investigations 4-5 I-Check
	Delta Science Content Reader Plant Life Cycles "How Do Plants Grow from Seeds?" pp. 6-15	
	Delta Science Content Reader Plant Needs "What Are Two Types of Plants?" pp. 8-15 "How Do Plants Make and Use Food?" pp. 16-19 "How Do Environments Affect Plants?: pp. 20-23	
6.L.1.2. Explain the significance of the processes of photosynthesis, respiration, and transpiration to the survival of green plants and other organisms.	**FOSS First Edition Populations and Ecosystems** *(pre-publication)* Investigation 5: Producers	Investigations 4-5 I-Check
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 5: Producers Part 1: Growing Producers pp. 266-277	**FQA:** Students answer in writing "What is the effect of light on producers?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 5: Producers Part 2: Biomass and Producers pp. 278-289	**FQA:** Students answer in writing "What do producers need to grow and increase biomass?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 5: Producers Part 3: Ecoscenario Producers pp. 290-293	**FQA:** Students answer in writing "What are the roles of specific producers in the ecosystem?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 5: Producers Part 4: Energy Transfer from Food pp. 294-310	**FQA:** Students answer in writing "How can we model and measure energy transfer from food?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* *FOSS Science Resources:* *"Where Does Food Come From?" pp. 44-49*	**FA:** Students write about their favorite food and record the path of how the sun's energy got into that food.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* *FOSS Science Resources:* *"Energy and Life"* pp. 50-52	**FA:** See Think Questions on page 49.

Grade 6

Ecosystems

Standards	FOSS Alignment	Assessment
6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.		
6.L.2.1. Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers.	**FOSS First Edition Populations and Ecosystems** *(pre-publication)* Investigation 5: Producers	Investigations 4-5 I-Check
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 5: Producers Part 1: Growing Producers pp. 266-277	**FQA:** Students answer in writing "What is the effect of light on producers?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 5: Producers Part 2: Biomass and Producers pp. 278-289	**FQA:** Students answer in writing "What do producers need to grow and increase biomass?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 5: Producers Part 3: Ecoscenario Producers pp. 290-293	**FQA:** Students answer in writing "What are the roles of specific producers in the ecosystem?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 5: Producers Part 4: Energy Transfer from Food pp. 294-310	**FQA:** Students answer in writing "How can we model and measure energy transfer from food?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* *FOSS Science Resources:* *"Where Does Food Come From?" pp. 44-49*	**FA:** Students write about their favorite food and record the path of how the sun's energy got into that food.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* *FOSS Science Resources:* *"Energy and Life"* pp. 50-52	**FA:** See Think Questions on page 49.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 6: Following the Energy Part 1: Using Energy pp. 321-328	**FQA:** Students answer in writing "What are the kinds of work that you do that require energy?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 6: Following the Energy Part 2: Food-Chain Game pp. 329-343	**FQA:** Students answer in writing "What is needed to sustain a food chain?" including their reasoning and evidence.

Standards	FOSS Alignment	Assessment
6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.		
6.L.2.1. Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers.	**FOSS First Edition Populations and Ecosystems** *(pre-publication)* Investigation 6: Following the Energy Part 3: Trophic Levels pp. 344-363	**FQA:** Students answer in writing "How does energy and biomass flow through an ecosystem?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 6: Following the Energy Part 4: Decomposers pp. 364-370 *FOSS Digital Media:* *"Food Webs"* *"Mono Lake Food Web"* *FOSS Science Resources:* *"Energy and Life" pp. 50-52* *"Rachel Carson and the Silent Spring" pp. 53-55* *"Trophic Levels" pp. 58-62* *"Decomposers" pp. 63-64*	**FQA:** Students answer in writing "What happens to the energy stored in the biomass of an organism when it dies?" including their reasoning and evidence.
	Delta Science Reader Plants in Our World "What Is a Plant?" pp. 2 "How Do Plants Grow, Survive, and Reproduce?" pp. 3-8	
6.L.2.2. Explain how plants respond to external stimuli (including dormancy and forms of tropism) to enhance survival in an environment.	**Delta Science Reader Plant Needs** "What Do Plants Need?" pp. 2-7 "How Do Environments Affect Plants?" pp. 20-23	
	Delta Science Reader Plants in Our World "How Do Plants Grow, Survive, and Reproduce?" pp. 3-8	
6.L.2.3. Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.	**FOSS First Edition Populations and Ecosystems** *(pre-publication)* Investigation 2: Sorting Out Life Part 1: Ecosystem Card Sort pp. 123-131	**FQA:** Students answer in writing "How is the milkweed-bug-habitat study similar to and different from Jane Goodall's population study?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 2: Sorting Out Life Part 2: Video Population Study pp. 132-137	**FQA:** Students answer in writing "What are the kinds of work that you do that require energy?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 2: Sorting Out Life Part 3: Ecoscenarios pp. 138-154	**FQA:** Students answer in writing "What are the defining characteristics of your ecosystem?" including their reasoning and evidence.

Standards	FOSS Alignment	Assessment
6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.		
6.L.2.3. Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.	**FOSS First Edition Populations and Ecosystems** *(pre-publication)* Investigation 2: Sorting Out Life *FOSS Science Resources Populations and Ecosystems* *Life in a Community pp. 9-10* *Ecoscenario Introductions pp. 11-22* *Defining a Biome pp. 23-24*	**PA:** Ecoscenarios Project
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 4: Minihabitats Part 1: The Physical Environment pp. 219-229	**FQA:** Students answer in writing "What abiotic factors should be considered when setting up aquatic and terrestrial habitats?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 4: Minihabitats Part 2: Introducing Life pp. 230-241	**FQA:** Students answer in writing "What interactions are likely for the organisms in the minihabitat?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 4: Minihabitats Part 3: Observing Minihabitats pp. 242-251 *FOSS Science Resources Populations and Ecosystems* *Biosphere 2: An Experiment in Isolation pp. 30-40*	**FQA:** Students answer in writing "What changes have taken place in the terrariums and the class aquariums?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 7: Population Size Part 1: Reproductive Potential pp. 383-396	**FQA:** Students answer in writing "How many milkweed bugs could be in your habitat at the end of the year?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 7: Population Size Part 2: Limiting Factors pp. 397-410	**FQA:** Students answer in writing "What are the limiting factors that affect algae and brine shrimp populations at Mono Lake?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 7: Population Size Part 3: Population Dynamics pp. 411-424 *FOSS Digital Media:* *"Milkweed Bugs Limited"* *"Unlimited"* *FOSS Science Resources:* *"Limiting Factors" pp. 65-71* *"Mono Lake Throughout the Year" pp. 72-73*	**FQA:** Students answer in writing "How does predicted population growth compare to actual population growth?" including their reasoning and evidence.

Standards	FOSS Alignment	Assessment
6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.		
6.L.2.3. Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.	**FOSS First Edition Populations and Ecosystems** *(pre-publication)* Investigation 8: Human Impact Part 1: Biodiversity pp. 439-455	**FQA:** Students answer in writing "Why is biodiversity important in an ecosystem?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 8: Human Impact Part 2: Invasive Species pp. 456-462	**FQA:** Students answer in writing "What can happen when a species is introduced into an ecosystem?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 8: Human Impact Part 3: Mono Lake Revisited pp. 463-475 *FOSS Science Resources:* *"Biodiversity" pp.74-78* *"Invasive Species" pp. 79-84*	**FQA:** Students answer in writing "What impact have people had on Mono Lake?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 9: Ecoscenarios Part 1: Human Involvement pp. 487-495	**FQA:** Students answer in writing "How have humans affected your ecoscenario, and what efforts have humans made to lessen this impact?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 9: Ecoscenarios Part 2: Evaluating Solutions pp. 496-503	**FQA:** Students answer in writing "How have humans affected your ecoscenario, and what efforts have humans made to lessen this impact?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* Investigation 9: Ecoscenarios Part 3: Presentations pp. 504-514 *FOSS Digital Media:* *"Ecoscenarios"* *FOSS Science Resources:* *"Invasive Species" pp. 79-84*	**FQA:** Students answer in writing "How have humans affected your ecoscenario, and what efforts have humans made to lessen this impact?" including their reasoning and evidence.
	FOSS First Edition Populations and Ecosystems *(pre-publication)* *FOSS Science Resources Populations and Ecosystems* *Invasive Species pp. 79-84*	Unit Survey/Post Test