Alignment to Missouri Learning Standards: Science Grade-Level Expectations

Grade Kindergarten

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS1 - Matter and Its Interactions A. Structure and Properties of Matter	
K.PS1.A.1 Make qualitative observations of the physical properties of objects (i.e., size, shape, color, mass).	**FOSS Next Generation Materials and Motion** Investigations Guide Investigation 1, Pts. 1-7 Investigation 2, Pts. 1-5 Investigation 3, Pts. 1-6 Investigation 4; Part 1-4 **Materials and Motion** *Science Resources* Book: *"Are You an Engineer?"* *"What Is Fabric Made From?"* *"How Are Fabrics Used?"* *"Pushes and Pulls"* ***Other modules that address this performance expectation:*** **Materials and Motion** (Grade K) **Air and Weather** (Grade 1) **Solids and Liquids** (Grade 3) **Water and Climate** (Grade 3)
PS2 - Motion and Stability: Forces and Interactions A. Forces and Motion	
K.PS2.A.1 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.]	**FOSS Next Generation Materials and Motion** Investigations Guide Investigation 4; Part 1-4 **Materials and Motion** *Science Resources* Book: *"Pushes and Pulls"* *"Collisions"*
K.PS2.A.2 Describe ways to change the motion of an object (i.e., how to cause an object to go slower, go faster, go farther, change direction, stop).	**FOSS Next Generation Materials and Motion** Investigations Guide Investigation 4; Part 1-4 **Materials and Motion** *Science Resources* Book: *"Pushes and Pulls"*
PS3 – Energy A. Definitions of Energy	
K.PS3.A.1 Make observations to determine the effect of sunlight on Earth's surface.	**FOSS Next Generation Trees and Weather** Investigations Guide: Investigation 3, Parts 1-3 **Trees and Weather** *Science Resources* Book: *"Up in the Sky"* *"Weather"*
PS3 – Energy B. Conservation of Energy and Energy Transfer	
K.PS3.B.1 With prompting and support, use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.	**FOSS Next Generation Trees and Weather** Investigations Guide: Investigation 3, Parts 1-3 **Trees and Weather** *Science Resources* Book: *"Up in the Sky"* *"Weather"*

Grade Kindergarten

Life Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
LS1 - From Molecules to Organisms: Structure and Processes C. Organization for Matter and Energy Flow in Organisms	
K.LS1.C.1 Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]	**FOSS Next Generation Animals Two by Two** Investigations Guide: Investigation 1, Pts. 1-5 Investigation 2, Pts. 1-3 Investigation 3, Pts. 1-3 Investigation 4, Pts. 1-4 **Animals Two by Two** *Science Resources* Book: *"Fish Same and Different"* *"Worms in Soil"* *"Fish Live in Many Places"* *"Isopods"* *"Birds Outdoors"* *"Animals All around Us"* *"Water and Land Snails"* *"Living and Nonliving"* **FOSS Next Generation Trees and Weather** Investigations Guide: Investigation 1, Pts. 1-6 Investigation 2, Pts. 1-5 Investigation 4, Pts. 1-9 **Trees and Weather** *Science Resources* Book: *"Where Do Trees Grow?"* *"Orange Trees"* *"What Do Plants Need?"* *"Maple Trees"* *"My Apple Tree"*

Grade Kindergarten

Earth Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ESS1 - Earth's Place in the Universe B. Earth and the Solar System	
K.ESS1.B.1 Make observations during different seasons to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.]	**FOSS Next Generation Trees and Weather** Investigations Guide: Investigation 3, Pts. 1-3 Investigation 4, Pts. 1-9 **Trees and Weather** *Science Resources* Book: *"Up in the Sky"* *"Maple Trees"* ***Other modules that address this performance expectation:*** **FOSS Next Generation Air and Weather** (Grade 1) Investigation 2, Parts 1-4 Investigation 4, Parts 1-3 **Air and Weather** *Science Resources* Book: *"What Is the Weather Today?"* *"What's the Weather?"* *"Clouds"* *"Water in the Air"* *"Changes in the Sky"* *"Seasons"* *"Getting through the Winter"*
ESS2 - Earth's Systems D. Weather and Climate	
K.ESS2.D.1 Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.]	**FOSS Next Generation Trees and Weather** Investigations Guide: Investigation 3, Pts. 1-3 Investigation 4, Pts. 1-9 **Trees and Weather** *Science Resources* Book: *"Where Do Trees Grow?"* *"Orange Trees"* *"What Do Plants Need?"* *"Maple Trees"* *"My Apple Tree"* ***Other modules that address this performance expectation:*** **FOSS Next Generation Air and Weather** (Grade 1)
ESS2 - Earth's Systems E. Biogeology	
K.ESS2.E.1 With prompting and support, construct an argument using evidence for how plants and animals (including but not limited to humans) can change the environment to meet their needs.	**FOSS Next Generation Animals Two by Two** Investigations Guide: Investigation 1, Pts. 1-5 Investigation 2, Pts. 1-3 Investigation 3, Pts. 1-3 Investigation 4, Pts. 1-4 **Animals Two by Two** *Science Resources* Book: *"Fish Same and Different"* *"Worms in Soil"* *"Fish Live in Many Places"* *"Isopods"* *"Birds Outdoors"* *"Animals All around Us"* *"Water and Land Snails"* *"Living and Nonliving"* **FOSS Next Generation Trees and Weather** Investigations Guide: Investigation 1, Pts. 1-6 Investigation 4, Pts. 1-9 **Trees and Weather** *Science Resources* Book: *"Where Do Trees Grow?"* *"Orange Trees"* *"What Do Plants Need?"* *"Maple Trees"* *"My Apple Tree"* **FOSS Next Generation Materials and Motion** Investigations Guide: Investigation 1, Pts. 1-7 Investigation 2, Pts. 1-5 Investigation 3, Pts. 1-6 **Materials and Motion** *Science Resources* Book: *"The Story of a Chair"* *"How Are Fabrics Used?"* *"Are You an Engineer?"* *"Land, Air, and Water"* *"The Story of a Box"* *"I Am Wood"* *"What Is Fabric Made From?"*

Grade Kindergarten

State Standard	FOSS Alignment (to module/investigation/part as needed)
ESS3 - Earth and Human Activity A. Natural Resources	
K.ESS3.A.1 Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.	**FOSS Next Generation Animals Two by Two** Investigations Guide: Investigation 1, Pts. 1-5 Investigation 2, Pts. 1-3 Investigation 3, Pts. 1-3 Investigation 4, Pts. 1-4 **Animals Two by Two** *Science Resources* Book: *"Fish Same and Different"* *"Worms in Soil"* *"Fish Live in Many Places"* *"Isopods"* *"Birds Outdoors"* *"Animals All around Us"* *"Water and Land Snails"* *"Living and Nonliving"* **FOSS Next Generation Trees and Weather** Investigations Guide: Investigation 1, Pts. 1-6 Investigation 4, Pts. 1-9 **Trees and Weather** *Science Resources* Book: *"Where Do Trees Grow?"* *"Orange Trees"* *"What Do Plants Need?"* *"Maple Trees"* *"My Apple Tree"* **FOSS Next Generation Materials and Motion** Investigations Guide: Investigation 1, Pts. 1-7 Investigation 2, Pts. 1-5 Investigation 3, Pts. 1-6 **Materials and Motion** *Science Resources* Book: *"The Story of a Chair"* *"How Are Fabrics Used?"* *"Are You an Engineer?"* *"Land, Air, and Water"* *"The Story of a Box"* *"I Am Wood"* *"What Is Fabric Made From?"*
ESS3 - Earth and Human Activity B. Natural Hazards	
K.ESS3.B.1 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	**FOSS Next Generation Materials and Motion** Investigations Guide: Investigation 3, Pts. 1-6 **Materials and Motion** *Science Resources* Book: *"What Is Fabric Made From?"* *"How Are Fabrics Used?"* *'Land, Air, and Water"* *"I Am Wood"* ***Other modules that address this performance expectation:*** **FOSS Next Generation Air and Weather** (Grade 1)

Grade Kindergarten

Engineering, Technology, and Application of Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ETS1 – Engineering Design A. Defining and Delimiting Engineering Problems	
K.ETS1.A.1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**FOSS Next Generation Materials and Motion** Investigations Guide: Investigation 1, Pt. 3 Investigation 2, Pts. 4-5 Investigation 3, Pt. 6 Investigation 4, Pts. 2-3 **Materials and Motion** *Science Resources* Book: *"Are You an Engineer?"* *"Collisions"*
ETS1 – Engineering Design B. Developing Possible Solutions	
K.ETS1.B.1 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**FOSS Next Generation Trees and Weather** Investigations Guide: Investigation 3, Pt. 3 **Trees and Weather** *Science Resources* Book: *"Weather"* **FOSS Next Generation Materials and Motion** Investigations Guide: Investigation 1, Pt. 3 Investigation 2, Pts. 4-5 Investigation 3, Pt. 6 Investigation 4, Pts. 2-3 **Materials and Motion** *Science Resources* Book: *"Are You an Engineer?"* *"Collisions"*
ETS1 – Engineering Design C. Optimizing the Solution Process	
K.ETS1.C.1 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**FOSS Next Generation Materials and Motion** Investigations Guide: Investigation 1, Pt. 3 Investigation 2, Pts. 4-5 Investigation 3, Pt. 6 Investigation 4, Pts. 2-3 **Materials and Motion** *Science Resources* Book: *"Are You an Engineer?"* *"Collisions"*

Alignment to Missouri Learning Standards: Science Grade-Level Expectations

Grade One

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS3 – Energy A. Definitions of Energy	
1.PS3.A.1 Identify the source of energy that causes an increase in the temperature of an object (e.g., Sun, stove, flame, light bulb).	**FOSS Next Generation Air and Weather** Investigations Guide Investigation 2, Parts 1-4 Investigation 4, Parts 1-3 **Air and Weather** *Science Resources* Book: *"What Is the Weather Today?"* *"Water in the Air"* *"Resources"* ***Other modules that address this performance expectation:*** **Solids and Liquids** (Grade 2)
PS4 - Waves and Their Applications in Technologies for Information Transfer A. Wave Properties	
1.PS4.A.1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]	**FOSS Next Generation Sound and Light** Investigations Guide: Investigation 1, Parts 1-3 Investigation 2, Parts 1-4 **Sound and Light** *Science Resources* Book: *"Vibrations and Sound"* *"Listen to This"* *"Animal Ears and Hearing"* *"Strings in Motion"* *"More Musical Instruments"*
PS4 - Waves and Their Applications in Technologies for Information Transfer C. Information Technologies and Instrumentation	
1.PS4.C.1 Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drum beats.]	**FOSS Next Generation Sound and Light** Investigations Guide: Investigation 2, Parts 1-4 Investigation 4, Parts 1-4 **Sound and Light** *Science Resources* Book: *"Animal Ears and Hearing"* *"Strings in Motion"* *"More Musical Instruments"* *"Playing in the Light"* *"Reflections"* *"Seeing the Light"* *"Communicating with Light"*

Grade One

Life Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
LS1 - From Molecules to Organisms: Structure and Processes A. Structure and Function	
1.LS1.A.1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]	**FOSS Next Generation Plants and Animals** Investigations Guide: Investigation 3, Parts 1-4 **Plants and Animals** *Science Resources* Book: *"What Do Animals Need?"* *"Plants and Animals around the World"* *"Learning from Nature"* **FOSS Next Generation Sound and Light** Investigations Guide: Investigation 2, Part 1 Investigation 4, Part 3 **Sound and Light** *Science Resources* Book: *"Animal Ears and Hearing"* *"Seeing the Light"* ***Other modules that address this performance expectation:*** **Animals Two by Two** (Grade K) **Trees and Weather** (Grade K)
LS3 - Heredity: Inheritance and Variation of Traits A. Inheritance of Traits	
1.LS3.A.1 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.]	**FOSS Next Generation Plants and Animals** Investigations Guide: Investigation 1, Part 4 Investigation 3, Parts 1-4 Investigation 4, Parts 1-3 **Plants and Animals** *Science Resources* Book: *"Variation"* *"What Do Animals Need?"* *"Plants and Animals around the World"* *"Learning from Nature"* *"Animals and Their Young"*

Grade One

Earth Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ESS1 - Earth's Place in the Universe A. The Universe and its Stars	
1.ESS1.A.1 Describe the presence of the Sun, Moon, and stars in the sky over time.	**FOSS Next Generation Air and Weather** Investigations Guide Investigation 2, Parts 1-4 Investigation 4, Parts 1-3 **Air and Weather** *Science Resources* Book: *"Changes in the Sky"* *"Seasons"*
1.ESS1.A.2 Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.]	**FOSS Next Generation Air and Weather** Investigations Guide Investigation 2, Parts 1-4 Investigation 4, Parts 1-3 **Air and Weather** *Science Resources* Book: *"Changes in the Sky"* *"Seasons"*
ESS2 - Earth's Systems D. Weather and Climate	
1.ESS2.D.1 Identify patterns indicating relationships between observed weather data and weather phenomena (e.g., temperature and types of precipitation, clouds and amounts of precipitation).	**FOSS Next Generation Air and Weather** Investigations Guide Investigation 2, Parts 1-4 Investigation 3, Parts 1-5 Investigation 4, Parts 1-3 **Air and Weather** *Science Resources* Book: *"What Is the Weather Today?"* *"Clouds"* *"Water in the Air"* *"Changes in the Sky"* *"Understanding the Weather"* *"Changes in the Sky"* *"Seasons"*

Grade One

Engineering, Technology, and Application of Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ETS1 – Engineering Design A. Defining and Delimiting Engineering Problems	
1.ETS1.A.1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**FOSS Next Generation Air and Weather** Investigations Guide Investigation 1, Part 2 **Air and Weather** *Science Resources* Book: *"What Is All around Us?"* **FOSS Next Generation Sound and Light** Investigations Guide: Investigation 2, Part 4 Investigation 4, Part 4 **Sound and Light** *Science Resources* Book: *"Communicating with Light"*
ETS1 – Engineering Design B. Developing Possible Solutions	
1.ETS1.B.1 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**FOSS Next Generation Plants and Animals** Investigations Guide: Investigation 3, Parts 1-2 **Plants and Animals** *Science Resources* Book: *"What Do Animals Need?"* *"Plants and Animals around the World"* **FOSS Next Generation Sound and Light** Investigations Guide: Investigation 2, Part 4 Investigation 4, Part 4 **Sound and Light** *Science Resources* Book: *"Communicating with Light"*
ETS1 – Engineering Design C. Optimizing the Solution Process	
1.ETS1.C.1 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**FOSS Next Generation Air and Weather** Investigations Guide Investigation 3, Part 5 **Air and Weather** *Science Resources* Book: *" Resources"* **FOSS Next Generation Sound and Light** Investigations Guide: Investigation 2, Part 4 Investigation 4, Part 4 **Sound and Light** *Science Resources* Book: *"Communicating with Light"*

Alignment to Missouri Learning Standards: Science Grade-Level Expectations

Grade Two

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS1 - Matter and Its Interactions A. Structure and Properties of Matter	
2.PS1.A.1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]	**FOSS Next Generation Solids and Liquids** Investigations Guide: Investigation 1, Parts 1-5 Investigation 2, Parts 1-4 Investigation 3, Parts 1-5 Investigation 4, Parts 1-5 **Solids and Liquids** *Science Resources* Book: *"Everything Matters"* *"Comparing Solids and Liquids"* *"Solid Objects and Materials"* *"Mix It Up!"* *"Liquids"* *"Heating and Cooling"* *"Pouring"* *"Is Change Reversible?"* **FOSS Next Generation Pebbles, Sand and Silt** Investigation 1, Parts 1-5 Investigation 2, Parts 1-4 Investigation 3, Parts 1-5 Investigation 4, Parts 1-5 **Pebbles, Sand and Silt** *Science Resources* Book *"Exploring Rocks"* *"What is in Soil?"* *"Colorful Rocks"* *"Testing Soils"* *"The Story of Sand"* *"Where is water found?"* *"Natural Resources"* *"States of Water"* ***Other modules that address this performance expectation:*** **Materials and Motion** (Grade K) **Water and Climate** (Grade 3)
2.PS1.A.2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.]	**FOSS Next Generation Solids and Liquids** Investigations Guide: Investigation 1, Parts 1-5 Investigation 2, Parts 1-4 Investigation 3, Parts 1-5 Investigation 4, Parts 1-5 **Solids and Liquids** *Science Resources* Book: *"Everything Matters"* *"Solid Objects and Materials"* *"Liquids"* *"Comparing Solids and Liquids"* **FOSS Next Generation Pebbles, Sand and Silt** Investigation 3, Parts 1-5 Investigation 4, Parts 2 **Pebbles, Sand and Silt** *Science Resources* Book: *"Making Things with Rocks"* *"Natural Resources"* *"Testing Soil"*

Grade Two

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS2 - Motion and Stability: Forces and Interactions A. Forces and Motion	
2.PS2.A.1 Analyze data to determine how the motion of an object changed by an applied force or the mass of an object.	**FOSS Next Generation Pebbles, Sand and Silt** Investigation 2, Part 4 Investigation 4, Parts 3-4 **Pebbles, Sand and Silt** *Science Resources* Book: *"Rocks Move"* *"Landforms"* *"Erosion"* ***Other modules that address this performance expectation:*** **Materials and Motion** (Grade K) **Air and Weather** (Grade 1) **Sound and Light** (Grade 1) **Motion and Matter** Grade 3)
PS4 - Waves and Their Applications in Technologies for Information Transfer A. Wave Properties	
2.PS4.A.1 Plan and conduct investigations to provide evidence that changes in vibration create change in sound.	**FOSS Next Generation Sound and Light** Investigations Guide (Grade 2) Investigation 1, Parts 1-3 Investigation 2, Parts 1-4 **Sound and Light** *Science Resources* Book: *"Vibrations and Sound"* *"Listen to This"* *"Animal Ears and Hearing"* *"Strings in Motion"* *"More Musical Instruments"*

Life Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
LS2 - Ecosystems: Interactions, Energy, and Dynamics A. Interdependent Relationships in Ecosystems	
2.LS2.A.1 Plan and conduct investigations on the growth of plants when growing conditions are altered (e.g., dark vs. light, water vs. no water).	**FOSS Next Generation Insects and Plants** Investigations Guide: Investigation 2, Parts 1-4 Investigation 5, Part 4 **Insects and Plants** *Science Resources* Book: *"How Plants Grow"* *"Flowers and Seeds"* ***Other modules that address this performance expectation:*** **Plants and Animals** (Grade 1)
2.LS2.A.2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.	**FOSS Next Generation Plants and Animals I**nvestigations Guide: Investigation 2, Parts 3-4 Investigation 5, Part 4 **Plants and Animals** *Science Resources* Book: *"Flowers and Seeds"* *"How Seeds Travel"* *"Life Goes Around"* ***Other modules that address this performance expectation:*** **Plants and Animals** (Grade 1)

Earth Science

Alignment to Missouri Learning Standards: Science Grade-Level Expectations

Grade Two

State Standard	FOSS Alignment (to module/investigation/part as needed)
ESS1 - Earth's Place in the Universe C. The History of Planet Earth	
2.ESS1.C.1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.]	**FOSS Next Generation Pebbles, Sand, and Silt** Investigations Guide: Investigation 2, Parts 3-4 Investigation 4, Part 4 **Pebbles, Sand, and Silt** *Science Resources* Book: *"Rocks Move"* *"Landforms"* *"Erosion"* *"Land and Water on Earth"*
ESS2 - Earth's Systems A. Earth Materials and Systems	
2.ESS2.A.1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. [Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]	**FOSS Next Generation Pebbles, Sand, and Silt** Investigations Guide: Investigation 2, Parts 4 Investigation 3, Parts 1, 5 Investigation 4, Part 4 **Pebbles, Sand, and Silt** *Science Resources* Book: *"Rocks Move"* *"Landforms"* *"Making Things with Rocks"* *"What are Natural Resources?"* *""Erosion"* *"Land and Water on Earth"*
ESS2 - Earth's Systems B. Plate Tectonics and Large-Scale Systems	
2.ESS2.B.1 Develop a model to represent the shapes and kinds of land and bodies of water in an area.	**FOSS Next Generation Pebbles, Sand, and Silt** Investigations Guide: Investigation 4, Part 3-4 **Pebbles, Sand, and Silt** *Science Resources* Book: *"Landforms"* *"What are Natural Resources?"* *""Erosion"* *"Ways to Represent Land and Water"*
ESS2 - Earth's Systems C. The Role of Water in Earth's Surface Processes	
2.ESS2.C.1 Obtain information to identify where water is found on Earth and that it can be solid or liquid.	**FOSS Next Generation Pebbles, Sand, and Silt** Investigations Guide: Investigation 4, Part 3-4 **Pebbles, Sand, and Silt** *Science Resources* Book: *"What are Natural Resources?"* *"Erosion"* *"Ways to Represent Land and Water"* ***Other modules that address this performance expectation:*** **Air and Weather** (Grade 1) **Water and Climate** (Grade 3)

Grade Two

Engineering, Technology, and Application of Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ETS1 – Engineering Design A. Defining and Delimiting Engineering Problems	
2.ETS1.A.1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**FOSS Next Generation Solids and Liquids** Investigations Guide: Investigation 1, Part 4 **Solids and Liquids** *Science Resources* Book: *"Towers"* *"Bridges"* **FOSS Next Generation Insects and Plants** Investigations Guide: Investigation 3, Part 4 Investigation 5, Part 2 **FOSS Next Generation Pebbles, Sand, and Silt** *Investigations Guide:* *Investigation 3, Parts 2-5* *Investigation 4, Part 2* **Pebbles, Sand, and Silt** *Science Resources* Book: *"What Are Natural Resources?"* *"What Is in Soil?"* *"Testing Soil"*
ETS1 – Engineering Design B. Developing Possible Solutions	
2.ETS1.B.1 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**FOSS Next Generation Solids and Liquids** Investigations Guide: Investigation 1, Part 4 **Solids and Liquids** *Science Resources* Book: *"Towers"* *"Bridges"* **FOSS Next Generation Insects and Plants** Investigations Guide: Investigation 3, Part 4 Investigation 5, Part 2 **FOSS Next Generation Pebbles, Sand, and Silt** *Investigations Guide:* *Investigation 3, Parts 2-5* *Investigation 4, Part 2* **Pebbles, Sand, and Silt** *Science Resources* Book: *"What Are Natural Resources?"* *"What Is in Soil?"* *"Testing Soil"*
ETS1 – Engineering Design C. Optimizing the Solution Process	
2.ETS1.C.1 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**FOSS Next Generation Solids and Liquids** Investigations Guide: Investigation 1, Part 4 **Solids and Liquids** *Science Resources* Book: *"Towers"* *"Bridges"* **FOSS Next Generation Insects and Plants** Investigations Guide: Investigation 2, Part 4 Investigation 3, Part 4 Investigation 5, Part 2 **FOSS Next Generation Pebbles, Sand, and Silt** *Investigations Guide:* *Investigation 3, Parts 2-5* *Investigation 4, Part 2* **Pebbles, Sand, and Silt** *Science Resources* Book: *"What Are Natural Resources?"* *"What Is in Soil?"* *"Testing Soil"*

Alignment to Missouri Learning Standards: Science Grade-Level Expectations

Grade Three

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS1 - Matter and Its Interactions A. Structure and Properties of Matter	
3.PS1.A.1 Predict and investigate that water can change from a liquid to a solid (freeze), and back again (melt), or from a liquid to a gas (evaporation), and back again (condensation) as the result of temperature changes.	**FOSS Next Generation Water and Climate** Investigations Guide Investigation 2; Parts 1-5 Investigation 3; Parts 1-5 **Water and Climate** *Science Resources* Book: *"Water: Hot and Cold"* *"Ice is Everywhere"* *"Drying Up"* *"Surface-Area Experiment"* *"Condensation"* *"The Water Cycle" (optional)* ***Other modules that address this performance expectation:*** **Solids and Liquids,** Investigation 4 (Grade 2)
PS1 - Matter and Its Interactions B. Chemical Reactions	
3.PS1.B.1 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	**FOSS Next Generation Water and Climate** Investigations Guide Investigation 2; Parts 1-5 Investigation 3; Parts 1-5 **Water and Climate** *Science Resources* Book: *"Water: Hot and Cold"* *"Ice is Everywhere"* *"Drying Up"* *"Surface-Area Experiment"* *"Condensation"* *"The Water Cycle" (optional)* ***Other modules that address this performance expectation:*** **Solids and Liquids,** Investigation 4 (Grade 2)
PS2 - Motion and Stability: Forces and Interactions B. Types of Interactions	
3.PS2.B.1 Plan and conduct investigations to determine the cause and effect relationship of electric or magnetic interactions between two objects not in contact with each other. [Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.]	**FOSS Next Generation Motion and Matter** Investigations Guide: Investigation 1, Parts 1-3 **Motion and Matter** *Science Resources* Book: *"Magnetism and Gravity"* *"What Scientists Do"* *"Change of Motion"* ***Other modules that address this performance expectation:*** **Energy** (Grade 4)

Grade Three

Life Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
LS1 - From Molecules to Organisms: Structure and Processes A. Structure and Function	
3.LS1.A.1 Construct an argument with evidence that in a particular ecosystem some organisms -- based on structural adaptations or behaviors -- can survive well, some survive less well, and some cannot survive at all. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]	**FOSS Next Generation Structures of Life** Investigations Guide: Investigation 3, Parts 2, 4-5 **Structures of Life** *Science Resources* Book: *"Adaptations"* *"Inside a Snail's Shell"* *"A Change in the Environment"* *"Food Chains"* ***Other modules that address this performance expectation:*** **Environments** (Grade 4)
LS1 - From Molecules to Organisms: Structure and Processes B. Growth and Development of Organisms	
3.LS1.B.1 Develop a model to compare and contrast observations on the life cycle of different plants and animals. [Clarification Statement: Changes organisms go through during their life form a pattern.]	**FOSS Next Generation Structures of Life** Investigations Guide: Investigation 1, Parts 1-3 Investigation 2, Parts 1-3 **Structures of Life** *Science Resources* Book: *"The Reason for Fruit"* *"The Most Important Seed"* *"Barbara McClintock"* *"Nature Journal--How Seeds Travel"* *"Germination"* *"Life Cycles"*
LS3 - Heredity: Inheritance and Variation of Traits A. Inheritance of Traits	
3.LS3.A.1 Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment. [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]	**FOSS Next Generation Structures of Life** Investigations Guide: Investigation 1, Part 3 Investigation 2, Parts 2-3 Investigation 3, Part 2 Investigation 4, Parts 1-2 **Structures of Life** *Science Resources* Book: *"Barbara McClintock"* *"Life Cycles"* *"Adaptations"* *"The Human Skeleton"* *"Barn Owls"* *"Fossils"* *"Skeletons on the Outside"* *"Crayfish, Snails, and Humans"*
LS3 - Heredity: Inheritance and Variation of Traits B. Variation of Traits	
3.LS3.B.1 Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and finding mates. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]	**FOSS Next Generation Structures of Life** Investigations Guide: Investigation 3, Parts 2 and 5 **Structures of Life** *Science Resources* Book: *"Adaptations"* *"Food Chains"* ***Other modules that address this performance expectation:*** **Environments** (Grade 4)

Grade Three

Life Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
LS3 - Heredity: Inheritance and Variation of Traits C. Adaptation	
3.LS3.C.1 Construct an argument with evidence that in a particular ecosystem some organisms -- based on structural adaptations or behaviors -- can survive well, some survive less well, and some cannot. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]	**FOSS Next Generation Structures of Life** Investigations Guide: Investigation 3, Parts 2, 4-5 **Structures of Life** *Science Resources* Book: *"Adaptations"* *"Inside a Snail's Shell"* *"A Change in the Environment"* *"Food Chains"* ***Other modules that address this performance expectation:*** **Environments** (Grade 4)
LS3 - Heredity: Inheritance and Variation of Traits D. Biodiversity and Humans	
3.LS3.D.1 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.]	**FOSS Next Generation Structures of Life** Investigations Guide: Investigation 3, Parts 2, 4-5 **Structures of Life** *Science Resources* Book: *"Adaptations"* *"Inside a Snail's Shell"* *"A Change in the Environment"* *"Food Chains"* ***Other modules that address this performance expectation:*** **Environments** (Grade 4)

Grade Three

Earth Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ESS2 - Earth's Systems D. Weather and Climate	
3.ESS2.D.1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.]	**FOSS Next Generation Water and Climate** Investigations Guide: Investigation 4, Parts 1-3 **Water and Climate** *Science Resources* Book: *"Climate Regions"* *"Wetlands for Flood Control"* *"Conserving Water during Droughts"*
3.ESS2.D.2 Obtain and combine information to describe climates in different regions of the world.	**FOSS Next Generation Water and Climate** Investigations Guide: Investigation 2, Parts 1-5 Investigation 3, Parts 1-5 Investigation 4, Parts 1-3 **Water and Climate** *Science Resources* Book: *"Vacation Aggravation"* *"Celsius and Fahrenheit"* *"Water: Hot and Cold"* *"Studying Weather"* *"Drying Up"* *"Surface-Area Experiment"* *"Climate Regions"* *"Wetlands for Flood Control"* *"Conserving Water during Droughts"*
ESS3 - Earth and Human Activity B. Natural Hazards	
3.ESS3.B.1 Make a claim about the merit of an existing design solution (e.g., levies, tornado shelters, sea walls, etc.) that reduces the impacts of a weather-related hazard. [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]	**FOSS Next Generation Water and Climate** Investigations Guide: Investigation 4, Parts 1-3 Investigation 5, Parts 1-3 **Water and Climate** *Science Resources* Book: *"Climate Regions"* *"Wetlands for Flood Control"* *"Conserving Water during Droughts"* *"Water: A Vital Resource"* *"Natural Resources"* *"Ellen Swallow Richards: An Early Ecologist"* *"Making Drinking Water Safe"* *"Using the Energy of Water"*

Grade Three

Engineering, Technology, and Application of Science

ETS1 – Engineering Design A. Defining and Delimiting Engineering Problems	
3.ETS1.A.1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**FOSS Next Generation Motion and Matter** Investigations Guide: Investigation 3, Parts 1-4 **Motion and Matter** *Science Resources* Book: *"What Engineers Do"* *"The Metric System"* *"Science Practices"* *"How Engineers and Scientists Work Together"* *"Engineering Practices"* *"Soap Box Derby"* *"Magnets at Work"* **FOSS Next Generation Water and Climate** Investigations Guide: Investigation 5, Part 3 **Water and Climate** *Science Resources* Book: *"Water: A Vital Resource"* *"Natural Resources"* *"Ellen Swallow Richards: An Early Ecologist"* *"Making Drinking Water Safe"* *"Using the Energy of Water"*
ETS1 – Engineering Design B. Developing Possible Solutions	
3.ETS1.B.1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**FOSS Next Generation Motion and Matter** Investigations Guide: Investigation 3, Parts 1-4 **Motion and Matter** *Science Resources* Book: *"What Engineers Do"* *"The Metric System"* *"Science Practices"* *"How Engineers and Scientists Work Together"* *"Engineering Practices"* *"Soap Box Derby"* *"Magnets at Work"* **FOSS Next Generation Water and Climate** Investigations Guide: Investigation 5, Part 3 **Water and Climate** *Science Resources* Book: *"Water: A Vital Resource"* *"Natural Resources"* *"Ellen Swallow Richards: An Early Ecologist"* *"Making Drinking Water Safe"* *"Using the Energy of Water"*
ETS1 – Engineering Design C. Optimizing the Solution Process	
3.ETS1.C.1 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.	**FOSS Next Generation Motion and Matter** Investigations Guide: Investigation 3, Parts 1-4 **Motion and Matter** *Science Resources* Book: *"What Engineers Do"* *"The Metric System"* *"Science Practices"* *"How Engineers and Scientists Work Together"* *"Engineering Practices"* *"Soap Box Derby"* *"Magnets at Work"* **FOSS Next Generation Water and Climate** Investigations Guide: Investigation 5, Part 3 **Water and Climate** *Science Resources* Book: *"Water: A Vital Resource"* *"Natural Resources"* *"Ellen Swallow Richards: An Early Ecologist"* *"Making Drinking Water Safe"* *"Using the Energy of Water"*

Alignment to Missouri Learning Standards: Science Grade-Level Expectations

Grade Four

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS2 - Motion and Stability: Forces and Interactions A. Forces and Motion	
4.PS2.A.1 Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	**FOSS Next Generation Energy** Investigations Guide: Investigation 4, Parts 2 and 3 Investigation 5, Part 1 **Energy** *Science Resources* Book: *"Energy"* *"What Causes Changes of Motion?"* *"Bowling"* *"Force and Energy"* *"Potential and Kinetic Energy at Work"* *"Waves"* ***Other modules that address this performance expectation:*** **Motion and Matter** Investigations 1-3 (Grade 3)
4.PS2.A.2 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.]	**FOSS Next Generation Energy** Investigations Guide: Investigation 4, Parts 2 and 3 **Energy** *Science Resources* Book: *"What Causes Changes of Motion?"* *"Bowling"* *"Force and Energy"* *"Potential and Kinetic Energy at Work"* ***Other modules that address this performance expectation:*** **Motion and Matter** Investigations 1-3 (Grade 3)
PS2 - Motion and Stability: Forces and Interactions B. Types of Interactions	
4.PS2.B.1 Plan and conduct a fair test to compare and contrast the forces (measured by a spring scale in Newtons) required to overcome friction when an object moves over different surfaces (i.e., rough/smooth).	**FOSS Next Generation Energy** Investigations Guide: Investigation 4, Parts 2 and 3 **Energy** *Science Resources* Book: *"What Causes Changes of Motion?"* *"Bowling"* *"Force and Energy"* *"Potential and Kinetic Energy at Work"* ***Other modules that address this performance expectation:*** **Motion and Matter** Investigations 1-3 (Grade 3) *Spring scales and Force-meters are not included in the K-5 modules. Addressable with our supplemental curriculum, which is available for purchase.*
4.PS2.B.2 Predict how changes in either the amount of force applied to an object or the mass of the object affects the motion (speed and direction) of the object.	**FOSS Next Generation Energy** Investigations Guide: Investigation 4, Parts 2 and 3 **Energy** *Science Resources* Book: *"What Causes Changes of Motion?"* *"Bowling"* *"Force and Energy"* *"Potential and Kinetic Energy at Work"* ***Other modules that address this performance expectation:*** **Motion and Matter** Investigations 1-3 (Grade 3)

Grade Four

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS3 – Energy A. Definitions of Energy	
4.PS3.A.1 Use evidence to construct an explanation relating the speed of an object to the energy of that object.	**FOSS Next Generation Energy** Investigations Guide: Investigation 4, Parts 2 and 3 **Energy** *Science Resources* Book: *"Energy"* *"What Causes Changes of Motion?"* *"Bowling"* *"Force and Energy"* *"Potential and Kinetic Energy at Work"* ***Other modules that address this performance expectation:*** **Motion and Matter** Investigations 1-3 (Grade 3)
PS3 – Energy B. Conservation of Energy and Energy Transfer	
4.PS3.B.1 Provide evidence to construct an explanation of an energy transformation (e.g. temperature change, light, sound, motion, and magnetic effects).	**FOSS Next Generation Energy** Investigations Guide: Investigation 1, Parts 1-4 Investigation 3, Parts 1-3 Investigation 4, Parts 1-3 Investigation 5, Parts 1-3 **Energy** *Science Resources* Book: *"Edison Sees the Light"* *"Energy Sources"* *"Science Practices"* *"Engineering Practices"* *"Thinking Like an Engineer"* *"Engineering a Solar Lighting Solution"* *"Electricity Creates Magnetism"* *"Using Magnetic Fields"* *"Electromagnets Everywhere"* *"Morse Gets Clicking"* *"Energy"* *"What Causes Change of Motion?"* *"Bowling"* *"Force and Energy"* *"Potential and Kinetic Energy at Work"*

Grade Four

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS3 – Energy B. Conservation of Energy and Energy Transfer	
4.PS3.B.2 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. [Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device.]	**FOSS Next Generation Energy** Investigations Guide: Investigation 1, Parts 1-4 Investigation 3, Parts 1-3 Investigation 4, Parts 1-3 Investigation 5, Parts 1-3 **Energy** *Science Resources* Book: *"Edison Sees the Light"* *"Energy Sources"* *"Series and Parallel Circuits"* *"Science Practices"* *"Engineering Practices"* *"Thinking Like an Engineer"* *"Engineering a Solar Lighting Solution"* *"When Magnet Meets Magnet"* *"Magnificent Magnetic Models"* *"Make a Magnet Compass"* *"Electricity Creates Magnetism"* *"Using Magnetic Fields"* *"Electromagnets Everywhere"* *"Morse Gets Clicking"* *"Waves"* *"More about Sound"* *"Light Interactions"* *"Throw a Little Light on Sight"* *"More Light on the Subject"* *"Alternative Sources of Energy"* *"Ms. Osgood's Class Report"*
PS3 – Energy C. Relationship Between Energy and Forces	
4.PS3.C.1 Use models to explain that simple machines change the amount of effort force and/or direction of force. [Clarification Statement: memorization of a simple machine is not the focus, concept builds on the application of force and motion.]	*Addressable with our supplemental curriculum, which is available for purchase.*
PS4 - Waves and Their Applications in Technologies for Information Transfer A. Wave Properties	
4.PS4.A.1 Develop a model of waves to describe patterns in terms of amplitude or wavelength and that waves can cause objects to move. (Boundary: The terms amplitude and wavelength should not be assessed.) [Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves.]	**FOSS Next Generation Energy** Investigations Guide: Investigation 5, Parts 1-3 **Energy** *Science Resources* Book: *"Waves"* *"More about Sound"* *"Light Interactions"* *"Throw a Little Light on Sight"* *"More Light on the Subject"* *"Alternative Sources of Energy"* *"Ms. Osgood's Class Report"*

Grade Four

Life Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
LS1 - From Molecules to Organisms: Structure and Processes A. Structure and Function	
4.LS1.A.1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and plant reproduction. [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.]	**FOSS Next Generation Environments** Investigations Guide: Investigation 1, Parts 1-3 Investigation 2, Parts 1-4 **Environments** *Science Resources* Book: *"Two Terrestrial Environments"* *"Darkling Beetles"* *"Setting Up a Terrarium"* *"Isopods"* *"Amazon Rainforest Journal"* *"Freshwater Environments"* *"What Is an Ecosystem?"* *"Food Chains and Food Webs"* *"Human Activities and Aquatic Environments"* *"Comparing Aquatic and Terrestrial Environments"* *"Animal Sensory Systems"* *"Saving Murrelets through Mimicry"*
LS1 - From Molecules to Organisms: Structure and Processes D. Information Processing	
4.LS1.D.1 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. [Clarification Statement: Emphasis is on systems of information transfer.]	**FOSS Next Generation Environments** Investigations Guide: Investigation 1, Parts 1-3 Investigation 2, Parts 1-4 **Environments** *Science Resources* Book: *"Two Terrestrial Environments"* *"Darkling Beetles"* *"Setting Up a Terrarium"* *"Isopods"* *"Amazon Rainforest Journal"* *"Freshwater Environments"* *"What Is an Ecosystem?"* *"Food Chains and Food Webs"* *"Human Activities and Aquatic Environments"* *"Comparing Aquatic and Terrestrial Environments"* *"Animal Sensory Systems"* *"Saving Murrelets through Mimicry"* ***Other modules that address this performance expectation:*** **Living Systems** (Grade 5)

Grade Four

Earth Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ESS1 - Earth's Place in the Universe C. The History of Planet Earth	
4.ESS1.C.1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. [Clarification Statement: Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.]	**FOSS Next Generation Soils, Rocks, and Landforms** Investigations Guide: Investigation 2, Parts 1-4 **Soils, Rocks, and Landforms** *Science Resources* Book: *"Erosion and Deposition"* *"Landforms Photo Album"* *"Fossils Tell a Story"* *"Pieces of a Dinosaur Puzzle"*
ESS2 - Earth's Systems A. Earth Materials and Systems	
4.ESS2.A.1 Plan and conduct scientific investigations or simulations to provide evidence how natural processes (e.g. weathering and erosion) shape Earth's surfaces.	**FOSS Next Generation Soils, Rocks, and Landforms** Investigations Guide: Investigation 1, Parts 1-4 Investigation 2, Parts 1-4 **Soils, Rocks, and Landforms** *Science Resources* Book: *"What Is Soil?"* *"Weathering"* *"Erosion and Deposition"* *"Landforms Photo Album"* *"Fossils Tell a Story"* *"Pieces of a Dinosaur Puzzle"*
ESS2 - Earth's Systems B. Plate Tectonics and Large-Scale Systems	
4.ESS2.B.1 Analyze and interpret data from maps to describe patterns of Earth's features. [Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.]	**FOSS Next Generation Soils, Rocks, and Landforms** Investigations Guide: Investigation 2, Parts 1-4 Investigation 3, Parts 1-4 **Soils, Rocks, and Landforms** *Science Resources* Book: *"Erosion and Deposition"* *"Landforms Photo Album"* *"Fossils Tell a Story"* *"Pieces of a Dinosaur Puzzle"* *"Topographic Maps"* *"The Story of Mount Shasta"* *"It Happened So Fast!"*
ESS3 - Earth and Human Activity A. Natural Resources	
4.ESS3.A.1 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. [Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.]	**FOSS Next Generation Soils, Rocks, and Landforms** Investigations Guide: Investigation 3, Parts 1-4 Investigation 4, Parts 1-4 **Soils, Rocks, and Landforms** *Science Resources* Book: *"Topographic Maps"* *"The Story of Mount Shasta"* *"It Happened So Fast!"* *"Monumental Rocks"* *"Geoscientists at Work"* *"Making Concrete"* *"Earth Materials in Art"* *"Where Do Rocks Come From?"*

Grade Four

Engineering, Technology, and Application of Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ETS1 – Engineering Design A. Defining and Delimiting Engineering Problems	
4.ETS1.A.1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**FOSS Next Generation Soils, Rocks, and Landforms** Investigations Guide: Investigation 4, Parts 2-3 **Soils, Rocks, and Landforms** *Science Resources* Book: *"Monumental Rocks"* *"Geoscientists at Work"* *"Making Concrete"* *"Earth Materials in Art"* *"Where Do Rocks Come From?"* **FOSS Next Generation Energy** Investigations Guide: Investigation 1, Part 4 Investigation 5, Part 3 **Energy** *Science Resources* Book: *"Science Practices"* *"Engineering Practices"* *"Thinking Like an Engineer"* *"Engineering a Solar Lighting Solution"* *"Alternative Sources of Electricity"* *"Ms. Osgood's Class Report"*
ETS1 – Engineering Design B. Developing Possible Solutions	
4.ETS1.B.1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**FOSS Next Generation Energy** Investigations Guide: Investigation 1, Part 4 Investigation 5, Part 3 **Energy** *Science Resources* Book: *"Science Practices"* *"Engineering Practices"* *"Thinking Like an Engineer"* *"Engineering a Solar Lighting Solution"* *"Alternative Sources of Electricity"* *"Ms. Osgood's Class Report"*
ETS1 – Engineering Design C. Optimizing the Solution Process	
4.ETS1.C.1 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.	**FOSS Next Generation Energy** Investigations Guide: Investigation 1, Part 4 Investigation 3, Parts 1-3 Investigation 5, Part 3 **Energy** *Science Resources* Book: *"Science Practices"* *"Engineering Practices"* *"Thinking Like an Engineer"* *"Engineering a Solar Lighting Solution"* *"Electricity Creates Magnetism"* *"Using Magnetic Fields"* *"Electromagnets Everywhere"* *"Morse Gets Clicking"* *"Alternative Sources of Electricity"* *"Ms. Osgood's Class Report"*

Alignment to Missouri Learning Standards: Science Grade-Level Expectations

Grade Five

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS1 - Matter and Its Interactions A. Structure and Properties of Matter	
5.PS1.A.1 Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.]	**FOSS Next Generation Mixtures and Solutions** Investigations Guide: Investigation 1, Parts 1-4 Investigation 2, Parts 1-3 Investigation 3, Parts 1-4 Investigation 4, Parts 1-4 Investigation 5, Parts 1-3 **Mixtures and Solutions** *Science Resources* Book: *All Chapters* **FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 3, Parts 1-3 Investigation 4, Parts 1-4 Investigation 5, Parts 1-4 **Earth and Sun** *Science Resources* Book: *"What Is Air?"* *"Earth's Atmosphere"* *"Weather Instruments"* *"Uneven Heating"* *"Heating the Air: Radiation and Conduction"* *"Wind and Convection"* *"Wind Power"* *"Solar Technology"* *"Condensation"* *"Where Is Earth's Water?"* *"The Water Cycle"* *"Severe Weather"* *"Earth's Climates"* *"Global Climate Change"* ***Other modules that address this performance expectation:*** **Motion and Matter** Investigations 1-3 (Grade 3) **Water and Climate** (Grade 3)
5.PS1.A.2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.]	**FOSS Next Generation Mixtures and Solutions** Investigations Guide: Investigation 1, Parts 1-4 Investigation 2, Parts 1-3 Investigation 3, Parts 1-4 Investigation 4, Parts 1-4 Investigation 5, Parts 1-3 **Mixtures and Solutions** *Science Resources* Book: *All Chapters*

Grade Five

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS1 - Matter and Its Interactions B. Types of Interactions of Matter	
5.PS1.B.1 Plan and conduct investigations to separate the components of a mixture/solution by their physical properties (i.e., sorting, filtration, magnets, screening).	**FOSS Next Generation Mixtures and Solutions** Investigations Guide: Investigation 1, Parts 1-4 Investigation 2, Parts 1-3 Investigation 3, Parts 1-4 Investigation 4, Parts 1-4 Investigation 5, Parts 1-3 **Mixtures and Solutions** *Science Resources* Book: *"Mixtures"* *"Drinking Ocean Water"* *"Taking Mixtures Apart"* *"Ask a Chemist"* *"Solid to Liquid"*
5.PS1.B.2 Conduct an investigation to determine whether the combining of two or more substances results in new substances.	**FOSS Next Generation Mixtures and Solutions** Investigations Guide: Investigation 5, Parts 1-3 **Mixtures and Solutions** *Science Resources* Book: *"Ask a Chemist"* *"When Substances Change"* *"Air Bags"*
PS2 - Motion and Stability: Forces and Interactions B. Types of Interactions	
5.PS2.B.1 Support an argument that the gravitational force exerted by Earth on objects is directed toward the planet's center. [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.]	**FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 2, Parts 1-5 **Earth and Sun** *Science Resources* Book: *"The Night Sky"* *"Looking through Telescopes"* *"Comparing the Size of Earth and the Moon"* *"Apollo 11 Space Mission"* *"How Did Earth's Moon Form?"* *"Changing Moon"* *"Lunar Cycle"* *"Eclipse"* *"Exploring the Solar System"* *"Planets of the Solar System"* *"Why Doesn't Earth Fly Off into Space?"* *"Stargazing"* *"Star Scientists"* *"Our Galaxy"*
PS3 – Energy D. Energy in Chemical Process and Everyday Life	
5.PS3.D.1 Use models to describe that energy stored in food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. [Clarification Statement: Examples of models could include diagrams, and flow charts.]	**FOSS Next Generation Living Systems** Investigations Guide: Investigation 1, Parts 1-4 Investigation 2, Parts 1-3 Investigation 3, Parts 1-3 Investigation 4, Parts 1-4 **Living Systems** *Science Resources* Book: *All Chapters*

Grade Five

Physical Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
PS4 - Waves and Their Applications in Technologies for Information Transfer A. Wave Properties	
5.PS4.A.1 Develop a model to describe that objects can be seen only when light is reflected off them or when they produce their own light.	**FOSS Next Generation Living Systems** Investigations Guide: Investigation 4, Parts 1 and 2 **Living Systems** *Science Resources* Book: *"Stimulus and Response in Humans"* *"Sensory Systems"* ***Other modules that address this performance expectation:*** **Energy** (Grade 4) Investigation 5, Parts 1-3 **Energy** *Science Resources* Book: *"Waves"* *"More about Sound"* *"Light Interactions"* *"Throw a Little Light on Sight"* *"More about Light on the Subject"* *"Alternative Sources of Electricity"* *"Ms. Osgood's Class Report"* **Sound and Light** (Grade 1)

Grade Five

Life Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
LS1 - From Molecules to Organisms: Structure and Processes A. Structure and Function	
5.LS1.A.1 Compare and contrast the major organs/organ systems (e.g., support, reproductive, digestive, transport/circulatory, excretory, response) that perform similar functions for animals belonging to different vertebrate classes.	**FOSS Next Generation Living Systems** Investigations Guide: Investigation 2, Parts 2 and 3 Investigation 3, Parts 1-3 Investigation 4, Parts 1 and 2 **Living Systems** *Science Resources* Book: *"There's Yeast in My Bread!"* *"Producers"* *"Getting Nutrients"* *"The Human Digestive System"* *"The Human Circulatory System"* *"The Human Respiratory System"* *"Other Circulatory and Respiratory Systems"* *"Stimulus and Response in Humans"* *"Sensory Systems"* *"Animal Communication"*
LS1 - From Molecules to Organisms: Structure and Processes C. Organization for Matter and Energy Flow in Organisms	
5.LS1.C.1 Support an argument that plants get the materials (i.e. carbon dioxide, water, sunlight) they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil. Do not assess photosynthesis.]	**FOSS Next Generation Living Systems** Investigations Guide: Investigation 2, Parts 1-3 Investigation 3, Parts 1-3 **Living Systems** *Science Resources* Book: *"There's Yeast in My Bread!"* *"Producers"* *"Getting Nutrients"* *"The Human Digestive System"* *"Leaf Classification"* *"Plant Vascular Systems"* *"The Story of Maple Syrup"* *"The Human Circulatory System"* *"The Human Respiratory System"* *"Other Circulatory and Respiratory Systems"*
LS2 - Ecosystems: Interactions, Energy, and Dynamics B. Cycles of matter and Energy Transfer in Ecosystems	
5.LS2.B.1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. [Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.]	**FOSS Next Generation Living Systems** Investigations Guide: Investigation 1, Parts 1-4 Investigation 2, Parts 1-3 Investigation 3, Parts 1-3 Investigation 4, Parts 1-4 **Living Systems** *Science Resources* Book: *All Chapters*

Grade Five

Earth Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ESS1 - Earth's Place in the Universe A. **The Universe and its Stars**	
5.ESS1.A.1 Support an argument that relative distances from Earth affect the apparent brightness of the sun compared to other stars.	**FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 1, Parts 1-3 Investigation 2, Parts 1-5 **Earth and Sun** *Science Resources* Book: *"Changing Shadows"* *"Sunrise and Sunset"* *"The Night Sky"* *"Looking through Telescopes"* *"Comparing the Size of Earth and the Moon"* *"Apollo 11 Space Mission"* *"How Did Earth's Moon Form?"* *"Changing Moon"* *"Lunar Cycle"* *"Eclipse"* *"Exploring the Solar System"* *"Planets of the Solar System"* *"Why Doesn't Earth Fly Off into Space?"* *"Stargazing"* *"Star Scientists"* *"Our Galaxy"*
ESS1 - Earth's Place in the Universe B. **Earth and the Solar System**	
5.ESS1.B.1 Make observations during different seasons to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.]	**FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 1, Parts 1-3 Investigation 2, Parts 1-5 **Earth and Sun** *Science Resources* Book: *"Changing Shadows"* *"Sunrise and Sunset"* *"The Night Sky"* *"Stargazing"*
5.ESS1.B.2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.]	**FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 1, Parts 1-3 Investigation 2, Parts 1-5 **Earth and Sun** *Science Resources* Book: *"Changing Shadows"* *"Sunrise and Sunset"* *"The Night Sky"* *"Looking through Telescopes"* *"Comparing the Size of Earth and the Moon"* *"Apollo 11 Space Mission"* *"How Did Earth's Moon Form?"* *"Changing Moon"* *"Lunar Cycle"* *"Eclipse"* *"Exploring the Solar System"* *"Planets of the Solar System"* *"Why Doesn't Earth Fly Off into Space?"* *"Stargazing"* *"Star Scientists"* *"Our Galaxy"*

Grade Five

State Standard	FOSS Alignment (to module/investigation/part as needed)
ESS2 - Earth's Systems A. Earth Materials and Systems	
5.ESS2.A.1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. [Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.]	**FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 3, Parts 1-3 Investigation 4, Parts 1-4 Investigation 5, Parts 1-4 **Earth and Sun** *Science Resources* Book: *"What is Air?"* *"Earth's Atmosphere"* *"Weather Instruments"* *"Uneven Heating"* *"Heating the Air: Radiation and Conduction"* *"Wind and Convection"* *"Wind Power?"* *"Solar Technology"* *"Condensation"* *"Where is Earth's Water?"* *"The Water Cycle"* *"Severe Weather"* *"Earth's Climates"* *"Global Climate Change"* **FOSS Next Generation Living Systems** Investigations Guide: Investigation 1, Parts 1-4 **Living Systems** *Science Resources* Book: *All Chapters* ***Other modules that address this performance expectation:*** **Soils, Rocks and Landforms** (Grade 4) **Environments** (Grade 4)
ESS2 - Earth's Systems C. The Role of Water in Earth's Surface Processes	
5.ESS2.C.1 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	**FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 5, Parts 1-4 **Earth and Sun** *Science Resources* Book: *"Condensation"* *"Where is Earth's Water?"* *"The Water Cycle"* *"Severe Weather"* *"Earth's Climates"* *"Global Climate Change"* **FOSS Next Generation Living Systems** Investigations Guide: Investigation 1, Parts 1-4 **Living Systems** *Science Resources* Book: *"Introduction to Systems"* *"Is Earth a System?"* *"The Biosphere"* *"Comparing Aquatic and Terrestrial Ecosystems"* *"Nature's Recycling System"* ***Other modules that address this performance expectation:*** **Soils, Rocks and Landforms** (Grade 4) **Environments** (Grade 4)

Grade Five

Earth Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ESS3 - Earth and Human Activity C. Human Impacts on Earth's Systems	
5.ESS3.C.1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	**FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 4, Parts 1-4 Investigation 5, Parts 1-4 **Earth and Sun** *Science Resources* Book: *"Uneven Heating"* *"Heating the Air: Radiation and Conduction"* *"Wind and Convection"* *"Wind Power"* *"Solar Technology"* *"Condensation"* *"Where Is Earth's Water?"* *"The Water Cycle"* *"Severe Weather"* *"Earth's Climates"* *"Global Climate Change"* **FOSS Next Generation Living Systems** Investigations Guide: Investigation 4, Parts 1-4 **Living Systems** *Science Resources* Book: *"Structures of the Brain"* *"Sensory Systems"* *"Animal Communication"* *"Monarch Migration"* *"North Atlantic Ocean Ecosystem"*

Grade Five

Engineering, Technology, and Application of Science

State Standard	FOSS Alignment (to module/investigation/part as needed)
ETS1 – Engineering Design A. Defining and Delimiting Engineering Problems	
5.ETS1.A.1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**FOSS Next Generation Mixtures and Solutions** Investigations Guide: Investigation 1, Part 3 Investigation 4, Part 4 **Mixtures and Solutions** *Science Resources* Book: *"Taking Mixtures Apart"* *"Science Practices"* *"Engineering Practices"* *"East Bay Academy for Young Scientists"* *"Drinking Ocean Water"* *"Creative Solutions"*
ETS1 – Engineering Design B. Developing Possible Solutions	
5.ETS1.B.1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**FOSS Next Generation Mixtures and Solutions** Investigations Guide: Investigation 1, Part 3 Investigation 4, Part 4 **Mixtures and Solutions** *Science Resources* Book: *"Taking Mixtures Apart"* *"Science Practices"* *"Engineering Practices"* *"East Bay Academy for Young Scientists"* *"Drinking Ocean Water"* *"Creative Solutions"* **FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 4, Part 4 **Earth and Sun** *Science Resources* Book: *"Solar Technology"*
ETS1 – Engineering Design C. Optimizing the Solution Process	
5.ETS1.C.1 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.	**FOSS Next Generation Mixtures and Solutions** Investigations Guide: Investigation 1, Part 3 **Mixtures and Solutions** *Science Resources* Book: *"Taking Mixtures Apart"* *"Science Practices"* *"Engineering Practices"* **FOSS Next Generation Earth and Sun** Investigations Guide: Investigation 4, Part 4 **Earth and Sun** *Science Resources* Book: *"Solar Technology"*