



Grade 4

Unit 1: Animals and Plants in Their Environment

NYS Science Standard	FOSS Alignment
Major Understandings <i>Quoted from New York State Performance Indicators (LE: 3.2a, b, 4.2b, 5.2c, g, 6.1a, f, 6.2a, b, 7.1a-c)</i>	
LE6.1a. Green plants are producers because they provide the basic food supply for themselves and animals.	FOSS Next Generation Environments Investigations Guide Investigation 2: Parts 1-4
LE 6.1b. All animals depend on plants. Some animals (predators) eat other animals (prey).	FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1-3 Investigation 2: Parts 1-4 Investigation 4: Part 1
LE 6.1c. Animals that eat plants for food may in turn become food for other animals. This sequence is called a food chain.	FOSS Next Generation Environments Investigations Guide Investigation 2: Parts 1-4
LE 6.1d. Decomposers are living things that play a vital role in recycling nutrients.	FOSS Next Generation Environments Investigations Guide Investigation 2: Parts 1-4
LE 6.2a. Plants manufacture food by utilizing air, water, and energy from the Sun.	FOSS Next Generation Environments Investigations Guide Investigation 2: Parts 1-4
LE 6.2b. The Sun's energy is transferred on Earth from plants to animals through the food chain.	FOSS Next Generation Environments Investigations Guide Investigation 2: Parts 1-4
LE 4.2b. Food supplies the energy and materials necessary for growth and repair.	FOSS Next Generation Environments Investigations Guide Investigation 2: Parts 1-4
LE 6.1e. An organism's pattern of behavior is related to the nature of that organism's environment, including the kinds and numbers of other organisms present, the availability of food and other resources, and the physical characteristics of the environment.	FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1-3 Investigation 2: Parts 1-4
LE 3.2a. Individuals within a species may compete with each other for food, mates, space, water, and shelter in their environment.	FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1-3 Investigation 2: Parts 1-4
LE 3.2b. All individuals have variations, and because of these variations, individuals of a species may have an advantage in surviving and reproducing.	FOSS Next Generation Environments Investigations Guide Investigation 3: Parts 1-4 Investigation 4: Parts 1-3
LE 5.2g. The health, growth, and development of organisms are affected by environmental conditions such as the availability of food, air, water, space, shelter, heat and sunlight.	FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1-3 Investigation 2: Parts 1-4 Investigation 3: Parts 1-4 Investigation 4: Parts 1-3
LE 5.2c. Senses can provide essential information (regarding danger, food, mates, etc.) to animals about their environment.	FOSS Next Generation Environments Investigations Guide Investigation 2: Parts 1-4
LE 6.1f. When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.	FOSS Next Generation Environments Investigations Guide Investigation 3: Parts 1-4 Investigation 4: Parts 1-3
LE 7.1a. Humans depend on their natural and constructed environments.	FOSS Next Generation Environments Investigations Guide Investigation 2: Part 3 Investigation 3: Parts 2-3 Investigation 4: Part 1



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Major Understandings <i>Quoted from New York State Performance Indicators (LE: 3.2a, b, 4.2b, 5.2c, g, 6.1a, f, 6.2a, b, 7.1a-c)</i>	
<p>LE 7.1b. Over time humans have changed their environment by cultivating crops and raising animals, creating shelter, using energy, manufacturing goods, developing means of transportation, changing populations, and carrying out other activities.</p>	<p>FOSS Next Generation Environments Investigations Guide Investigation 2: Part 3 Investigation 3: Parts 2-3 Investigation 4: Part 1</p>
<p>LE 7.1c. Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.</p>	<p>FOSS Next Generation Environments Investigations Guide Investigation 2: Part 3 Investigation 3: Parts 2-3 Investigation 4: Part 1</p>



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Unit 1: Animals and Plants in Their Environment

MST Standard	FOSS Alignment
Standard 2: Information Systems	
Key Idea 1: Information technology is used to retrieve, process, and communicate information as a tool to enhance learning.	FOSS Next Generation Environments Investigations Guide Investigation 2: Parts 3-4 Investigation 3: Parts 2-3 Investigation 4: Parts 1, 3
Key Idea 2: Knowledge of the impacts and limitations of information systems is essential to its effective and ethical use.	FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1-3 Investigation 2: Parts 1-4 Investigation 3: Parts 1-4 Investigation 4: Parts 1-3
Standard 6: Interconnectedness: Common Themes	
Key Idea 1: Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.	FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1, 3 Investigation 2: Parts 1, 3 Investigation 3: Parts 2-3
Key Idea 2: Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.	FOSS Next Generation Environments Investigations Guide Investigation 1: Part 2 Investigation 2: Part 3 Investigation 3: Parts 1-2
Key Idea 3: The grouping of magnitudes of size, time, frequency, and pressures or other units of measurement into a series of relative order provides a useful way to deal with the immense range and the changes in scale that affect the behavior and design of systems.	FOSS Next Generation Environments Investigations Guide Investigation 3: Part 1
Key Idea 4: Equilibrium is a state of stability due either to a lack of change (static equilibrium) or a balance between opposing forces (dynamic equilibrium).	FOSS Next Generation Environments Investigations Guide Investigation 2: Part 3
Key Idea 5: Identifying patterns of change is necessary for making predictions about future behavior and conditions.	FOSS Next Generation Environments Investigations Guide Investigation 4: Part 2
Key Idea 6: In order to arrive at the best solution that meets the criteria within constraints, it is often necessary to make trade offs.	<i>Foundational experiences and connections to this Key Idea are found in FOSS Next Generation Environments. However the conceptual design of the investigations does not include direct correlations to this Key Idea.</i>
Standard 7: Interdisciplinary Problem Solving	
Key Idea 1: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.	FOSS Next Generation Environments Investigations Guide Investigation 3: Parts 1, 2
Key Idea 2: Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.	FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1, 2, 3 Investigation 2: Parts 1, 2, 3, 4 Investigation 3: Parts 1, 2, 3, 4 Investigation 4: Parts 1, 2



Grade 4

Unit 1: Animals and Plants in Their Environment

NGSS Cross-Cutting Concepts	FOSS Alignment
<p>Patterns: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.</p> <ul style="list-style-type: none"> - Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. - Patterns of change can be used to make predictions. - Patterns can be used as evidence to support an explanation. 	<p>FOSS Next Generation Environments Investigations Guide Investigation 4: Part 2</p>
<p>Cause and Effect: Mechanism and Prediction: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.</p> <ul style="list-style-type: none"> - Cause and effect relationships are routinely identified, tested, and used to explain change. - Events that occur together with regularity might or might not be a cause and effect relationship. 	<p>FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1, 2 Investigation 3: Parts 2, 3 Investigation 4: Part 1</p>
<p>Scale, Proportion, and Quantity: In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.</p> <ul style="list-style-type: none"> - Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods. - Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. 	<p>FOSS Next Generation Environments Investigations Guide Investigation 3: Parts 1</p>
<p>Systems and System Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.</p> <ul style="list-style-type: none"> - A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. - A system can be described in terms of its components and their interactions 	<p>FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1, 3 Investigation 2: Parts 1, 3 Investigation 3: Parts 1, 4</p>
<p>Energy and Matter: Flows, Cycles, and Conservation: Tracking energy and matter flows into, out of, and within systems helps one understand their system's behavior.</p> <ul style="list-style-type: none"> - Matter is made of particles. - Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. - Energy can be transferred in various ways and between objects. 	<p>FOSS Next Generation Environments Investigations Guide Investigation 2: Parts 2-3</p>
<p>Structure and Function: The way an object is shaped or structured determines many of its properties and functions.</p> <ul style="list-style-type: none"> - Different materials have different substructures, which can sometimes be observed. - Substructures have shapes and parts that serve functions. 	<p>FOSS Next Generation Environments Investigations Guide Investigation 1: Parts 1-3 Investigation 4: Part 3</p>
<p>Stability and Change: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.</p> <ul style="list-style-type: none"> - Change is measured in terms of differences over time and may occur at different rates. - Some systems appear stable, but over long periods of time will eventually change. 	<p>FOSS Next Generation Environments Investigations Guide Investigation 2: Part 3</p>



Grade 4

Unit 2: Electricity and Magnetism

NYS Science Standard	FOSS Alignment
Major Understandings <i>Quoted from New York State Performance Indicators (PS: 3.1c, e, f, 4.1a-e, g, 5.1e, 5.2a, b)</i>	
<p>PS 4.1a. Energy exists in various forms: heat, electric, sound, chemical, mechanical, light.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-4 Investigation 3: Parts 1-5 Investigation 4: Parts 1-3 Investigation 5: Parts 1-2</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-3 Investigation 3: Parts 1-3 Investigation 4: Parts 1-3 Investigation 5: Parts 1-3</p>
<p>PS 4.1b. Energy can be transferred from one place to another.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-4 Investigation 3: Parts 1-5 Investigation 4: Parts 1-3 Investigation 5: Parts 1-2</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-3 Investigation 3: Parts 1-3 Investigation 4: Parts 1-3 Investigation 5: Parts 1-3</p>
<p>PS 4.1c. Some materials transfer energy better than others (heat and electricity).</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 3-4 Investigation 3: Part 1 Investigation 4: Part 1 Investigation 5: Part 1</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Part 2 Investigation 2: Part 2 Investigation 3: Part 1 Investigation 4: Parts 1, 3 Investigation 5: Parts 1, 3</p>
<p>PS 4.1d. Energy and matter interact: water is evaporated by the Sun's heat; a bulb is lighted by means of electrical current; a musical instrument is played to produce sound; dark colors may absorb light, light colors may reflect light.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-4 Investigation 3: Parts 1-3 Investigation 4: Parts 1-3 Investigation 5: Parts 1-2</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-2 Investigation 3: Parts 1-3 Investigation 4: Parts 1-3 Investigation 5: Parts 1-3</p>



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Unit 2: Electricity and Magnetism

NYS Science Standard	FOSS Alignment
Major Understandings <i>Quoted from New York State Performance Indicators (PS: 3.1c, e, f, 4.1a-e, g, 5.1e, 5.2a, b)</i>	
<p>PS 4.1e. Electricity travels in a closed circuit.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 1-3</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 1-3</p>
<p>PS 3.1c. Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Part 3 Investigation 3: Parts 1-5 Investigation 5: Part 1</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Part 2 Investigation 2: Parts 1-3 Investigation 4: Part 3 Investigation 5: Part 1</p>
<p>PS 3.1e. The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 3-4 Investigation 3: Parts 1-5 Investigation 5: Parts 1-2</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Part 2 Investigation 2: Parts 1-3 Investigation 4: Part 1 Investigation 5: Part 2</p>
<p>PS 3.1f. Objects and/or materials can be sorted or classified according to their properties.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Part 3 Investigation 3: Parts 3, 5</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Part 2 Investigation 2: Parts 1-2</p>
<p>PS 3.1g. Magnetism is a force that may attract or repel certain materials.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 3: Parts 1-5</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 2: Parts 1, 2, 3</p>
<p>PS 5.2a. The forces of gravity and magnetism can affect objects through gases, liquids, and solids.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 3: Parts 3-4</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 2: Parts 2-3</p>
<p>PS 5.2b. The force of magnetism on objects decreases as distance increases.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 3: Parts 3-4</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 2: Parts 2-3</p>



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Unit 2: Electricity and Magnetism

NYS Science Standard	FOSS Alignment
Major Understandings <i>Quoted from New York State Performance Indicators (PS: 3.1c, e, f, 4.1a-e, g, 5.1e, 5.2a, b)</i>	
<p>PS 4.1g. Interactions with forms of energy can be either helpful or harmful.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide</p> <ul style="list-style-type: none"> Investigation 1: Parts 1-4 Investigation 2: Parts 1-4 Investigation 3: Parts 1-5 Investigation 4: Parts 1-3 Investigation 5: Parts 1-2 <p>FOSS Next Generation Energy Investigations Guide</p> <ul style="list-style-type: none"> Investigation 1: Parts 1-4 Investigation 2: Parts 1-3 Investigation 3: Parts 1-3 Investigation 4: Parts 1-3 Investigation 5: Parts 1-3



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Unit 2: Electricity and Magnetism

MST Standard	FOSS Alignment
Standard 6: Interconnectedness: Common Themes	
<p>Key Idea 1: Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 3-4 Investigation 4: Part 1 Investigation 5: Part 1</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 1-2, 4 Investigation 3: Part 1 Investigation 4: Part 1 Investigation 5: Parts 1-3</p>
<p>Key Idea 2: Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 2: Parts 1-2 Investigation 4: Parts 1-2 Investigation 5: Part 1</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Part 3 Investigation 3: Parts 1-2 Investigation 5: Parts 1-2</p>
<p>Key Idea 6: In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 2: Parts 1-4 Investigation 4: Parts 1-3</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 3-4 Investigation 3: Parts 1-3 Investigation 5: Part 3</p>
Standard 7: Interdisciplinary Problem Solving	
<p>Key Idea 1: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 3: Part 4 Investigation 4: Part 2</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 2: Part 3 Investigation 3: Part 2 Investigation 4: Part 3 Investigation 5: Part 1</p>
<p>Key Idea 2: Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.</p>	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-4 Investigation 3: Parts 1-5 Investigation 4: Parts 1-3 Investigation 5: Part 1</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-3 Investigation 3: Parts 1-3 Investigation 4: Parts 1-3 Investigation 5: Parts 1-3</p>



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Unit 2: Electricity and Magnetism

NGSS Cross-Cutting Concepts	FOSS Alignment
<p>Patterns: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them. Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products.</p> <ul style="list-style-type: none"> - Patterns of change can be used to make predictions. - Patterns can be used as evidence to support an explanation. 	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 3: Part 4 Investigation 4: Part 2</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 2: Part 3 Investigation 3: Part 2 Investigation 4: Parts 2-3 Investigation 5: Part 1</p>
<p>Cause and Effect: Mechanism and Prediction: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.</p> <ul style="list-style-type: none"> - Cause and effect relationships are routinely identified, tested, and used to explain change. - Events that occur together with regularity might or might not be a cause and effect relationship. 	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 1-3 Investigation 2: Parts 1-4 Investigation 3: Parts 1-5 Investigation 4: Parts 1-2 Investigation 5: Part 1</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-3 Investigation 3: Parts 1-2 Investigation 4: Parts 2-3 Investigation 5: Parts 1-3</p>
<p>Systems and System Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.</p> <ul style="list-style-type: none"> - A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. - A system can be described in terms of its components and their interactions. 	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 3-4 Investigation 4: Part 1 Investigation 5: Part 1</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 1-2, 4 Investigation 3: Part 1 Investigation 4: Part 1 Investigation 5: Parts 1-3</p>
<p>Energy and Matter: Flows, Cycles, and Conservation: Tracking energy and matter flows into, out of, and within systems helps one understand their system's behavior.</p> <ul style="list-style-type: none"> - Matter is made of particles. - Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. - Energy can be transferred in various ways and between objects. 	<p>FOSS Third Edition Energy & Electromagnetism Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Part 4 Investigation 3: Part 4 Investigation 4: Part 1</p> <p>FOSS Next Generation Energy Investigations Guide Investigation 1: Parts 1-2 Investigation 2: Part 3 Investigation 3: Part 1 Investigation 4: Parts 1, 3 Investigation 5: Parts 1, 3</p>
<p>Structure and Function: The way an object is shaped or structured determines many of its properties and functions.</p> <ul style="list-style-type: none"> - Different materials have different substructures, which can sometimes be observed. - Substructures have shapes and parts that serve functions. 	<p><i>Foundational experiences and connections to this Cross-Cutting Concept are found in FOSS Third Edition Energy and Electromagnetism or FOSS Next Generation Energy. However the conceptual design of the investigations does not include direct correlations to this CCC.</i></p>



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Unit 2: Electricity and Magnetism

NGSS Cross-Cutting Concepts	FOSS Alignment
<p>Stability and Change: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.</p> <ul style="list-style-type: none"> - Change is measured in terms of differences over time and may occur at different rates. - Some systems appear stable, but over long periods of time will eventually change. 	<p><i>Foundational experiences and connections to this Cross-Cutting Concept are found in FOSS Third Edition Energy and Electromagnetism or FOSS Next Generation Energy. However the conceptual design of the investigations does not include direct correlations to this CCC.</i></p>



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Unit 3: Properties of Water

NYS Science Standard	FOSS Alignment
Major Understandings <i>Quoted from New York State Performance Indicators (PS: 2.1c, 3.1a-f, 3.2a-c, 4.1d, LE:6.2c)</i>	
<p>PS 3.1a. Matter takes up space and has mass. Two objects cannot occupy the same place at the same time.</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Part 3 Investigation 2: Parts 2-5 Investigation 3: Parts 2-4 Investigation 5: Part 1</p>
<p>PS 3.1b. Matter has properties (color, hardness, odor, sound, taste, etc.) that can be observed through the senses.</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-5 Investigation 3: Parts 1-5 Investigation 5: Parts 1-2</p>
<p>PS 3.1c. Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-5 Investigation 3: Parts 1-4 Investigation 5: Parts 1-2</p>
<p>PS 3.1d. Measurements can be made with standard metric units and nonstandard units. (Note: Exceptions to the metric system usage are found in meteorology.)</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Part 3 Investigation 2: Parts 1-2 Investigation 3: Parts 1-4 Investigation 5: Parts 1-3</p>
<p>PS 3.1e. The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders.</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Parts 1, 3-4 Investigation 2: Parts 1-2 Investigation 5: Part 1</p>
<p>PS 2.1c. Water is recycled by natural processes on Earth.</p> <ul style="list-style-type: none"> - evaporation: changing of water (liquid) into water vapor (gas) - condensation: changing of water vapor (gas) into water (liquid) - precipitation: rain, sleet, snow, hail - runoff: water flowing on Earth's surface - groundwater: water that moves downward into the ground 	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Part 1 Investigation 3: Part 5 Investigation 4: Part 3 Investigation 5: Parts 1-2</p>
<p>PS 3.2a. Matter exists in three states: solid, liquid, gas.</p> <ul style="list-style-type: none"> - Solids have a definite shape and volume. - Liquids do not have a definite shape but have a definite volume. - Gases do not hold their shape or volume. 	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 3-5 Investigation 3: Parts 2-5</p>
<p>PS 3.2b. Temperature can affect the state of matter of a substance.</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 2: Parts 1-5 Investigation 3: Parts 2-5</p>
<p>PS 3.2c. Changes in the properties or materials of objects can be observed and described.</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Parts 1, 3-4 Investigation 2: Parts 1-5 Investigation 3: Parts 1-5 Investigation 5: Parts 1-2</p>
<p>LE 6.2c. Heat energy from the Sun powers the water cycle. (See Physical Science Key Idea 2.)</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 3: Part 5</p>



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Unit 3: Properties of Water

NYS Science Standard	FOSS Alignment
Major Understandings <i>Quoted from New York State Performance Indicators (PS: 2.1c, 3.1a-f, 3.2a-c, 4.1d, LE:6.2c)</i>	
<p>PS 3.1f. Objects and/or materials can be sorted or classified according to their properties.</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Parts 1, 4 Investigation 2: Part 3 Investigation 5: Parts 1-2</p>
<p>PS 4.1d. Energy and matter interact: water is evaporated by the Sun's heat; a bulb is lighted by means of electrical current; a musical instrument is played to produce sound; dark colors may absorb light, light colors may reflect light.</p>	<p>FOSS Next Generation Water and Climate Investigations Guide Investigation 2: Parts 2, 4-5 Investigation 3: Parts 2-5 Investigation 5: Part 3</p>



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Unit 3: Properties of Water

MST Standard	FOSS Alignment (to module/investigation/part as needed)
Standard 6: Interconnectedness: Common Themes	
Key Idea 1: Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.	FOSS Next Generation Water and Climate Investigations Guide Investigation 5: Part 3
Key Idea 2: Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.	FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Parts 1, 4 Investigation 2: Parts 2-3 Investigation 3: Parts 2, 5
Key Idea 3: The grouping of magnitudes of size, time, frequency, and pressures or other units of measurement into a series of relative order provides a useful way to deal with the immense range and the changes in scale that affect the behavior and design of systems.	FOSS Next Generation Water and Climate Investigations Guide Investigation 2: Part 1 Investigation 3: Part 5 Investigation 4: Part 2
Key Idea 4: Equilibrium is a state of stability due either to a lack of change (static equilibrium) or a balance between opposing forces (dynamic equilibrium).	<i>Foundational experiences and connections to this Key Idea are found in FOSS Next Generation Water and Climate. However the conceptual design of the investigations does not include direct correlations to this Key Idea.</i>
Key Idea 5: Identifying patterns of change is necessary for making predictions about future behavior and conditions.	FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Part 1 Investigation 3: Parts 1, 4 Investigation 4: Parts 1-2
Key Idea 6: In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.	FOSS Next Generation Water and Climate Investigations Guide Investigation 5: Part 3
Standard 7: Interdisciplinary Problem Solving	
Key Idea 1: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.	FOSS Next Generation Water and Climate Investigations Guide Investigation 3: Part 3
Key Idea 2: Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.	FOSS Next Generation Water and Climate Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-5 Investigation 3: Parts 1, 3-5 Investigation 4: Parts 1-3 Investigation 5: Parts 1-3



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Unit 3: Properties of Water

NGSS Cross-Cutting Concepts	FOSS Alignment
<p>Patterns: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.</p> <ul style="list-style-type: none"> - Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. - Patterns of change can be used to make predictions. - Patterns can be used as evidence to support an explanation. 	<p>FOSS Next Generation Water and Climate Investigations Guide</p> <p>Investigation 1: Part 1 Investigation 3: Parts 1, 4 Investigation 4: Parts 1-2</p>
<p>Cause and Effect: Mechanism and Prediction: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.</p> <ul style="list-style-type: none"> - Cause and effect relationships are routinely identified, tested, and used to explain change. - Events that occur together with regularity might or might not be a cause and effect relationship. 	<p>FOSS Next Generation Water and Climate Investigations Guide</p> <p>Investigation 1: Part 2 Investigation 2: Part 3 Investigation 3: Parts 3-4 Investigation 4: Part 3 Investigation 5: Part 1</p>
<p>Scale, Proportion, and Quantity: In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.</p> <ul style="list-style-type: none"> - Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods. - Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. 	<p>FOSS Next Generation Water and Climate Investigations Guide</p> <p>Investigation 2: Part 1 Investigation 3: Part 5 Investigation 4: Part 2</p>
<p>Systems and System Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.</p> <ul style="list-style-type: none"> - A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. - A system can be described in terms of its components and their interactions. 	<p>FOSS Next Generation Water and Climate Investigations Guide</p> <p>Investigation 5: Part 3</p>
<p>Energy and Matter: Flows, Cycles, and Conservation: Tracking energy and matter flows into, out of, and within systems helps one understand their system's behavior.</p> <ul style="list-style-type: none"> - Matter is made of particles. - Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. - Energy can be transferred in various ways and between objects. 	<p><i>Foundational experiences and connections to this Cross-Cutting Concept are found in FOSS Next Generation Water and Climate. However the conceptual design of the investigations does not include direct correlations to this CCC.</i></p>
<p>Structure and Function: The way an object is shaped or structured determines many of its properties and functions.</p> <ul style="list-style-type: none"> - Different materials have different substructures, which can sometimes be observed. - Substructures have shapes and parts that serve functions. 	<p><i>Foundational experiences and connections to this Cross-Cutting Concept are found in FOSS Next Generation Water and Climate. However the conceptual design of the investigations does not include direct correlations to this CCC.</i></p>



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Unit 3: Properties of Water

NGSS Cross-Cutting Concepts	FOSS Alignment
<p>Stability and Change: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.</p> <ul style="list-style-type: none"> - Change is measured in terms of differences over time and may occur at different rates. - Some systems appear stable, but over long periods of time will eventually change. 	<p><i>Foundational experiences and connections to this Cross-Cutting Concept are found in FOSS Next Generation Water and Climate. However the conceptual design of the investigations does not include direct correlations to this CCC.</i></p>



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Unit 4: Interactions of Air, Water and Land

NYS Science Standard	FOSS Alignment
Major Understandings <i>Quoted from New York State Performance Indicators (PS: 2.1c, 3.1a-f, 3.2a-c, 4.1d, LE:6.2c)</i>	
<p>PS 2.1d. Erosion and deposition result from the interaction among air, water, and land.</p> <ul style="list-style-type: none"> - Interaction between air and water breaks down Earth materials. - Pieces of Earth material may be moved by air, water, wind, and gravity. - Pieces of Earth material will settle or deposit on land or in the water in different places. - Soil is composed of broken-down pieces of living and nonliving Earth material. 	<p>FOSS Next Generation Soils, Rocks and Landforms Investigations Guide</p> <p>Investigation 1: Parts 1-4 Investigation 2: Parts 1-3 Investigation 3: Part 4</p>
<p>PS 2.1c. Water is recycled by natural processes on Earth.</p> <ul style="list-style-type: none"> - evaporation: changing of water (liquid) into water vapor (gas) - condensation: changing of water vapor (gas) into water (liquid) - precipitation: rain, sleet, snow, hail - runoff: water flowing on Earth's surface - groundwater: water that moves downward into the ground 	<p>FOSS Next Generation Water and Climate Investigations Guide</p> <p>Investigation 1: Part 1 Investigation 3: Part 5 Investigation 4: Part 3 Investigation 5: Parts 1-2</p>
<p>PS 2.1e. Extreme natural events (floods, fires, earthquakes, volcanic eruptions, hurricanes, tornadoes, and other severe storms) may have positive or negative impacts on living things.</p>	<p>FOSS Next Generation Soils, Rocks and Landforms Investigations Guide</p> <p>Investigation 3: Parts 3-4</p>



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Unit 4: Interactions of Air, Water and Land

MST Standard	FOSS Alignment (to module/investigation/part as needed)
Standard 6: Interconnectedness: Common Themes	
Key Idea 1: Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.	FOSS Next Generation Soils, Rocks and Landforms Investigations Guide Investigation 1: Part 1 Investigation 2: Part 1
Key Idea 2: Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.	FOSS Next Generation Soils, Rocks and Landforms Investigations Guide Investigation 1: Parts 2-3 Investigation 2: Parts 1-2, 4 Investigation 3: Parts 1-3
Key Idea 3: The grouping of magnitudes of size, time, frequency, and pressures or other units of measurement into a series of relative order provides a useful way to deal with the immense range and the changes in scale that affect the behavior and design of systems.	FOSS Next Generation Soils, Rocks and Landforms Investigations Guide Investigation 2: Part 1 Investigation 3: Parts 1-2 Investigation 4: Part 1
Key Idea 4: Equilibrium is a state of stability due either to a lack of change (static equilibrium) or a balance between opposing forces (dynamic equilibrium).	FOSS Next Generation Soils, Rocks and Landforms Investigations Guide Investigation 2: Parts 1, 3-4 Investigation 3: Part 3
Key Idea 5: Identifying patterns of change is necessary for making predictions about future behavior and conditions.	FOSS Next Generation Soils, Rocks and Landforms Investigations Guide Investigation 1: Parts 1, 3-4 Investigation 2: Parts 1-3 Investigation 3: Parts 2-3
Key Idea 6: In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.	FOSS Next Generation Soils, Rocks and Landforms Investigations Guide Investigation 2: Part 2 Investigation 4: Part 2
Standard 7: Interdisciplinary Problem Solving	
Key Idea 1: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.	FOSS Next Generation Soils, Rocks and Landforms Investigations Guide Investigation 3: Parts 2-3
Key Idea 2: Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.	FOSS Next Generation Soils, Rocks and Landforms Investigations Guide Investigation 1: Parts 1-4 Investigation 2: Parts 1-4 Investigation 3: Parts 2-4 Investigation 4: Parts 1-3



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Unit 4: Interactions of Air, Water and Land

NGSS Cross-Cutting Concepts	FOSS Alignment
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<p>Cause and Effect: Mechanism and Prediction: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.</p> <ul style="list-style-type: none"> - Cause and effect relationships are routinely identified, tested, and used to explain change. - Events that occur together with regularity might or might not be a cause and effect relationship. 	<p>FOSS Next Generation Soils, Rocks and Landforms Investigations Guide</p> <p>Investigation 1: Parts 2-3 Investigation 2: Parts 1-4 Investigation 3: Part 4</p>
<p>Scale, Proportion, and Quantity: In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.</p> <ul style="list-style-type: none"> - Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods. - Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. 	<p>FOSS Next Generation Soils, Rocks and Landforms Investigations Guide</p> <p>Investigation 2: Part 1 Investigation 3: Parts 1-2 Investigation 4: Part 1</p>
<p>Systems and System Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.</p> <ul style="list-style-type: none"> - A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. - A system can be described in terms of its components and their interactions. 	<p>FOSS Next Generation Soils, Rocks and Landforms Investigations Guide</p> <p>Investigation 1: Part 1 Investigation 2: Part 1</p>
<p>Energy and Matter: Flows, Cycles, and Conservation: Tracking energy and matter flows into, out of, and within systems helps one understand their system's behavior.</p> <ul style="list-style-type: none"> - Matter is made of particles. - Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. - Energy can be transferred in various ways and between objects. 	<p><i>Foundational experiences and connections to this Cross-Cutting Concept are found in FOSS Next Generation Soils, Rocks and Landforms. However the conceptual design of the investigations does not include direct correlations to this CCC.</i></p>
<p>Structure and Function: The way an object is shaped or structured determines many of its properties and functions.</p> <ul style="list-style-type: none"> - Different materials have different substructures, which can sometimes be observed. - Substructures have shapes and parts that serve functions. 	<p>FOSS Next Generation Soils, Rocks and Landforms Investigations Guide</p> <p>Investigation 4: Part 3</p>



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Unit 4: Interactions of Air, Water and Land

NGSS Cross-Cutting Concepts	FOSS Alignment
<p>Stability and Change: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.</p> <ul style="list-style-type: none"> - Change is measured in terms of differences over time and may occur at different rates. - Some systems appear stable, but over long periods of time will eventually change. 	<p>FOSS Next Generation Soils, Rocks and Landforms Investigations Guide</p> <p>Investigation 2: Parts 1, 3-4 Investigation 3: Part 3</p>