



Kindergarten

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	Plant & Animal Secrets (6-9 weeks)	Weather Watching (6-9 weeks)	Force Olympics (6-9 weeks)
Week 1	Mystery 1: Why do woodpeckers peck wood? (<i>K-LS1-1</i>)	Mystery 1: Have you ever watched a storm? (<i>K-ESS2-1</i>)	Mystery 1: What's the biggest excavator? (<i>Foundational for K-PS2-1, K-PS2-2</i>)
Week 2	Mystery 2 Read Along: Where do animals live? (<i>K-ESS3-1</i>)	Mystery 2 Read Along: How can you get ready for a big storm? (<i>K-ESS3-2</i>)	Mystery 2 Read Along: Why do builders need so many big machines? (<i>Foundational for K-PS2-1, K-PS2-2</i>)
Week 3	Mystery 3: How can you find animals in the woods? (<i>K-LS1-1</i>)	Mystery 3: What will the weather be like on your birthday? (<i>K-ESS2-1</i>)	Mystery 3: How can you knock down a wall made of concrete? (<i>K-PS2-1, K-PS2-2</i>)
Week 4	Mystery 4 Read Along: How do animals make their home in the forest? (<i>K-ESS2-2</i>)	Mystery 4 Read Along: How do you know what to wear for the weather? (<i>K-ESS2-1</i>)	Mystery 4 Read Along: How can you knock down the most bowling pins? (<i>K-PS2-1</i>)
Week 5	Mystery 5: How do plants and trees grow? (<i>K-LS1-1</i>)	Mystery 5: How could you warm up a frozen playground? (<i>K-PS3-1, K-PS3-2, K-2-ETS1-2, K-2-ETS1-3</i>)	Mystery 5: How can we protect a mountain town from falling rocks? (<i>K-PS2-2, K-2-ETS1-2, K-2-ETS1-3</i>)
Week 6	Mystery 5 - Part 2 : How do plants and trees grow? (<i>K-LS1-1</i>)	Mystery 6 Read Along: How could you walk barefoot across hot pavement without burning your feet? (<i>K-PS3-1, K-PS3-2</i>)	Mystery 6 Read Along: How could you invent a trap? (<i>K-PS2-2, K-2-ETS1-2</i>)
Week 7	Mystery 6 Read Along: Why would you want an old log in your backyard? (<i>K-ESS3-3</i>)		

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More Science each week	Longer Science units	Cross Curricular Integration
Use items from the Optional Extras to extend each Mystery if you have more time.	Add a week after each Mystery to teach items from the Optional Extras.	If you want to extend the Mystery but don't have extra time, use Optional Extras during literacy time.



Grade 1

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	Plant & Animal Superpowers (6-9 weeks)	Spinning Sky (6-9 weeks)	Lights & Sounds (6-9 weeks)
Week 1	Mystery 1: Why do birds have beaks? (1-LS1-1)	Mystery 1: Could a statue's shadow move? (1-ESS1-1)	Mystery 1: How do they make silly sounds in cartoons? (1-PS4-1)
Week 2	Mystery 2 Read Along: Why do baby ducks follow their mother? (1-LS1-2)	Mystery 2 Read Along: What does your shadow do when you're not looking? (1-ESS1-1)	Mystery 2 Read Along: Where do sounds come from? (1-PS4-1)
Week 3	Mystery 3: Why are polar bears white? (1-LS1-1)	Mystery 3: How can the sun help you if you're lost? (1-ESS1-1)	Mystery 3: What if there were no windows? (1-PS4-3)
Week 4	Mystery 4 Read Along: Why do family members look alike? (1-LS3-1)	Mystery 4 Read Along: Why do you have to go to bed early in the summer? (1-ESS1-2)	Mystery 4 Read Along: Can you see in the dark? (1-PS4-2)
Week 5	Mystery 5: Why don't trees blow down in the the wind? (1-LS1-1, K-2-ETS1-2, K-2-ETS1-3)	Mystery 5: Why do the stars come out at night? (1-ESS1-1)	Mystery 5: How could you send a secret message to someone far away? (1-PS4-4, K-2-ETS1-2)
Week 6	Mystery 6 Read Along: What do sunflowers do when you're not looking? (1-LS1-1)	Mystery 6 Read Along: How can stars help you if you get lost? (1-ESS1-1)	Mystery 6 Read Along: How do boats find their way in the fog? (1-PS4-4)

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Grade 2

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	Animal Adventures (3-6 weeks)	Plant Adventures (5-10 weeks)	Work of Water (4-8 weeks)	Material Magic (5-10 weeks)
Week 1	Mystery 1: How many different kinds of animals are there? <i>(2-LS4-1)</i>	Mystery 1: How did a tree travel halfway around the world? <i>(2-LS2-2)</i>	Mystery 1: If you floated down a river, where would you end up? <i>(2-ESS2-2, 2-ESS2-3)</i>	Mystery 1: Why do we wear clothes <i>(2-PS1-1, 2-PS1-2, K-2-ETS1-2, K-2-ETS1-3)</i>
Week 2	Mystery 2: Why do frogs say “ribbit”? <i>(2-LS4-1)</i>	Mystery 2: Do plants eat dirt? <i>(2-LS2-1 and 2-LS4-1)</i>	Mystery 2: Why is there sand at the beach? <i>(2-ESS2-2)</i>	Mystery 2: Can you really fry an egg on a hot sidewalk? <i>(2-PS1-1, 2-PS1-2)</i>
Week 3	Mystery 3: How could you get more birds to visit a bird feeder? <i>(2-LS4-1, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3)</i>	Mystery 3: Why do trees grow so tall? <i>(2-LS2-1)</i>	Mystery 3: What’s strong enough to make a canyon? <i>(2-ESS1-1, 2-ESS2-1, 2-ESS2-2)</i>	Mystery 3: Why are so many toys made out of plastic? <i>(2-PS1-1, 2-PS1-2, 2-PS1-4)</i>
Week 4		Mystery 4: Should you water a cactus? <i>(2-LS2-1, 2-LS4-1)</i>	Mystery 4: How can you stop a landslide? <i>(2-ESS2-1, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3)</i>	Mystery 4: What materials might be invented in the future? <i>(2-PS1-1, 2-PS1-2, K-2-ETS1-2, K-2-ETS1-3)</i>
Week 5		Mystery 5: Where do plants grow best? <i>(2-LS2-1, 2-LS4-1)</i>		Mystery 5: Could you build a house out of paper? <i>(2-PS1-1, 2-PS1-3, K-2-ETS1-2, K-2-ETS1-3)</i>

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	Animals Through Time (8-16 weeks)	Power of Flowers (4-8 weeks)	Stormy Skies (4-8 weeks)	Invisible Forces (5-10 weeks)
Week 1	Mystery 1: Where can you find whales in a desert? (3-LS4-1, 3-LS4-4) <i>*Revision Coming Spring 2019</i>	Mystery 1: Why do plants grow flowers? (3-LS1-1)	Mystery 1: Where do clouds come from? (Foundational 3-ESS2-1)	Mystery 1: How could you win a tug-of-war against a bunch of adults? (3-PS2-1)
Week 2	Mystery 2: How do we know what dinosaurs looked like? (3-LS4-1)	Mystery 2: Why do plants give us fruit? (3-LS1-1)	Mystery 2: How can we predict when it's going to storm? (3-ESS2-1)	Mystery 2: What makes bridges so strong? (3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3, Foundational 3-PS2-1)
Week 3	Mystery 3: Can you outrun a dinosaur? (3-LS4-1) <i>*Revision Coming Spring 2019</i>	Mystery 3: Why are some apples red and some green? (3-LS3-1)	Mystery 3: Why are some places always hot? (3-ESS2-2)	Mystery 3: How can you go faster down a slide? (3-PS2-1, 3-PS2-2)
Week 4	Mystery 4: What kinds of animals might there be in the future? (3-LS3-1, 3-LS4-2)	Mystery 4: How could you make the biggest fruit in the world? (3-LS3-1)	Mystery 4: How can you keep a house from blowing away in a windstorm? (3-ESS3-1, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)	Mystery 4: What can magnets do? (3-PS2-3, 3-PS2-4)
Week 5	Mystery 5: Can selection happen without people? (3-LS3-1, 3-LS4-2, 3-LS4-3, 3-LS4-4)			Mystery 5: How could you unlock a door using a magnet? (3-PS2-3, 3-PS2-4, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)
Week 6	Mystery 6: Why do dogs wag their tails? (3-LS2-1)			
Week 7	Mystery 7: What's the best way to get rid of mosquitos? (3-LS4-3, 3-LS4-4, 3-5-ETS1-2)			
Week 8	Mystery 8: How long can people (and animals) survive in outer space? (3-LS3-2)			

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	Human Machine (4-8 weeks)	Birth of Rocks (4-8 weeks)	Waves of Sound (3-6 weeks)	Energizing Everything (8-16 weeks)
Week 1	Mystery 1: Why do your biceps bulge? (4-LS1-1)	Mystery 1: Could a volcano pop up where you live? (4-ESS1-1, 4-ESS2-2)	Mystery 1: How far can a whisper travel? (4-PS4-1, 4-PS4-3)	Mystery 1: How is your body similar to a car? (4-PS3-1, 4-PS3-4) <i>*Revised April 2019</i>
Week 2	Mystery 2: What do people who are blind see? (4-LS1-1, 4-LS1-2, 4-PS4-2)	Mystery 2: Why do some volcanoes explode? (4-ESS1-1)	Mystery 2: What would happen if you screamed in outer space? (4-PS4-1)	Mystery 2: What makes roller coasters go so fast? (4-PS3-1, 4-PS3-3)
Week 3	Mystery 3: How can some animals see in the dark? (4-LS1-1, 4-LS1-2, 4-PS4-2)	Mystery 3: Will a mountain last forever? (4-ESS1-1, 4-ESS2-1)	Mystery 3: Why are some sounds high and some sounds low? (4-PS4-1)	Mystery 3: Why is the first hill of a roller coaster always the highest?(4-PS3-3)
Week 4	Mystery 4: How does your brain control your body? (4-LS1-1, 4-LS1-2)	Mystery 4: How could you survive a landslide? (4-ESS2-1, 4-ESS3-2)		Mystery 4: Could you knock down a building using only dominoes? (4-PS3-4, 3-5-ETS1-1)
Week 5				Mystery 5: Can you build a chain reaction machine? (4-PS3-4, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)
Week 6				Mystery 6: What if there were no electricity? (4-PS3-2, 4-PS3-4)
Week 7				Mystery 7: How long did it take to travel across the country before cars and planes? (4-PS3-2, 4-PS3-4)
Week 8				Mystery 8: Where does energy come from? (4-ESS3-1)

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	Web of Life (6-12 weeks)	Watery Planet (4-8 weeks)	Spaceship Earth (8-16 weeks)	Chemical Magic (5-10 weeks)
Week 1	Mystery 1: Why would a hawk move to New York City? (5-LS2-1)	Mystery 1: How much water is in the world? (5-ESS2-2)	Mystery 1: Why does the sun rise and set? (5-ESS1-2) <i>*Revision Coming Spring 2019</i>	Mystery 1: Are magic potions real? (5-PS1-1, 5-PS1-2)
Week 2	Mystery 2: What do plants eat? (5-LS1-1, 5-LS2-1)	Mystery 2: When you turn on the faucet, where does the water come from? (5-ESS2-2 and 5-ESS3-1)	Mystery 2: Who set the first clock? (5-ESS1-2)	Mystery 2: Could you transform something worthless into gold? (5-PS1-1, 5-PS1-2)
Week 3	Mystery 3: Where do fallen leaves go? (5-LS2-1)	Mystery 3: Can we make it rain? (5-ESS2-1)	Mystery 3: How can the sun tell you the season? (5-ESS1-2) <i>Formerly Mystery 4, switched on 12/31/18</i>	Mystery 3: What would happen if you drank a glass of acid? (5-PS1-3)
Week 4	Mystery 4: Do worms really eat dirt? (5-LS2-1, 5-LS1-1)	Mystery 4: How can you save a town from a hurricane? (5-ESS2-1, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)	Mystery 4: Why do the stars change with the seasons? (5-ESS1-2) <i>Formerly Mystery 3, switched on 12/31/18</i>	Mystery 4: What do fireworks, rubber, and silly putty have in common? (5-PS1-4)
Week 5	Mystery 5: Why do you have to clean a fish tank but not a pond? (5-LS2-1)		Mystery 5: Why does the moon change shape? (5-ESS1-2)	Mystery 5: Why do some things explode? (5-PS1-1)
Week 6	Mystery 6: Why did the dinosaurs go extinct? (5-PS3-1)		Mystery 6: What are the wandering stars? (5-ESS1-2)	
Week 7			Mystery 7: Why is gravity different on other planets? (5-PS2-1)	
Week 8			Mystery 8: Could there be life on other planets? (5-ESS1-1)	

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FOSS[®] Next Generation[™]

NGSS Alignment Overview

Middle School

Three-dimensional active science
for the Next Generation





The Next Generation of NGSS Alignment

FOSS Next Generation fulfills the vision of the Framework and the NGSS in three key ways:

- 1. FOSS is designed around learning as a developmental progression**—FOSS provides experiences that allow students to continually build and develop more complex science and engineering ideas.
- 2. FOSS focuses on core ideas**—FOSS chooses depth over superficial coverage and addresses core ideas at multiple grade levels in evermore complex ways.
- 3. FOSS integrates scientific knowledge with the practices of science and engineering**—FOSS investigations provide students with engaging firsthand experiences and sense-making activities.

Science and engineering practices have always been a critical part of FOSS investigations.

Rigorous ELA connections build literacy skills through science.

Every FOSS investigation integrates both disciplinary core ideas and crosscutting concepts.

HUMAN SYSTEMS INTERACTIONS — Framework and NGSS		Connections to NGSS	
Inv. 2: Supporting Cells	Science and Engineering Practices	Connections to Common Core State Standards—ELA	
	Developing and using models Constructing explanations Obtaining, evaluating, and communicating information	Reading—Literacy in Science and Technical Subjects 1. Cite specific textual evidence to support analysis of science and technical texts. 2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. 3. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics. 4. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text. 5. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). Writing—Literacy in Science and Technical Subjects 6. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. 7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. 8. Gather relevant information from multiple print and digital sources, using search terms effectively. Speaking and Listening 1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on middle school topics, texts, and issues, building on others' ideas and expressing their own clearly. Language 5. Demonstrate understanding of word relationships and nuances in word meanings. 6. Acquire and use academic and domain-specific words and phrases.	
		Disciplinary Core Ideas	Crosscutting Concepts
		LS1.A: Structure and function • In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. LS1.C: Organization for matter and energy flow in organisms • Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. PS3.D: Energy in chemical processes and everyday life • Cellular respiration in plants and animals involves chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials.	Scale, proportion, and quantity Systems and system models Energy and matter
38		Human Systems Interactions Course—FOSS Next Generation	
Full Option Science System		39	

FOSS Instructional Design

FOSS is designed around active investigations that provide engagement with science concepts and science and engineering practices. Surrounding and supporting those firsthand investigations are experiences that help build student understanding of core science concepts and deepen scientific habits of mind.





FOSS Next Generation

Physical Science Performance Expectations

		Chemical Interactions	Waves	Electro-magnetic Force	Gravity and Kinetic Energy	Variables and Design
MS-PS1-1	Develop models to describe the atomic composition of simple molecules and extended structures.	✓				
MS-PS1-2	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	✓				
MS-PS1-3	Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	✓				
MS-PS1-4	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	✓				
MS-PS1-5	Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	✓				
MS-PS1-6	Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.*	✓				
MS-PS2-1	Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.*				✓	
MS-PS2-2	Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.			✓	✓	
MS-PS2-3	Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.			✓		
MS-PS2-4	Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.				✓	
MS-PS2-5	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.			✓	✓	
MS-PS3-1	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.				✓	
MS-PS3-2	Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.			✓	✓	
MS-PS3-3	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.*	✓				
MS-PS3-4	Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	✓				
MS-PS3-5	Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object.	✓		✓	✓	✓
MS-PS4-1	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.		✓			
MS-PS4-2	Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.		✓			
MS-PS4-3	Integrate qualitative scientific and technical information to support the claim that digitized signals (sent as wave pulses) are a more reliable way to encode and transmit information.		✓			
Additional performance expectations addressed:			HS-ESS2-3	MS-ESS3-3 MS-ESS3-4	MS-ESS1-2	

Courses in grey have not yet been published.
Anticipated performance expectation coverage is shown.

Contact a Sales Representative at 800.338.5270



Physical Science Performance Expectations *continued*

		Chemical Interactions	Waves	Electro-magnetic Force	Gravity and Kinetic Energy	Variables and Design
MS-ETS-1	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	✓	✓	✓	✓	✓
MS-ETS-2	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	✓	✓	✓	✓	✓
MS-ETS-3	Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	✓	✓	✓	✓	✓
MS-ETS-4	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	✓	✓	✓	✓	✓

Physical Science Core Ideas

		Chemical Interactions	Waves	Electro-magnetic Force	Gravity and Kinetic Energy	Variables and Design
PS1.A	Structures of Matter and Nuclear Processes	✓				
PS1.B	Chemical Reactions	✓				
PS2.A	Forces and Motion			✓	✓	
PS2.B	Types of Interactions			✓	✓	
PS3.A	Definitions of Energy	✓		✓	✓	
PS3.B	Conservation of Energy and Energy Transfer	✓		✓	✓	
PS3.C	Relationship between Energy and Forces			✓	✓	
PS3.D	Energy in Chemical Processes and Everyday Life					
PS4.A	Wave Properties		✓			
PS4.B	Electromagnetic Radiation		✓			
PS4.C	Information Technologies in Instrumentation		✓			
ETS1.A	Defining and Delimiting Engineering Problems	✓	✓	✓	✓	
ETS1.B	Developing Possible Solutions	✓	✓	✓	✓	
ETS1.C	Optimizing the Design Solution	✓	✓	✓	✓	

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FOSS Next Generation

Earth Science Performance Expectations

		Weather and Water	Earth History	Planetary Science
MS-ESS1-1	Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.	✓		✓
MS-ESS1-2	Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.			✓
MS-ESS1-3	Analyze and interpret data to determine scale properties of objects in the solar system.			✓
MS-ESS1-4	Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.		✓	✓
MS-ESS2-1	Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.		✓	
MS-ESS2-2	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.		✓	✓
MS-ESS2-3	Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.		✓	
MS-ESS2-4	Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	✓		✓
MS-ESS2-5	Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	✓		
MS-ESS2-6	Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	✓		
MS-ESS3-1	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.		✓	✓
MS-ESS3-2	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	✓	✓	
MS-ESS3-3	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	✓	✓	✓
MS-ESS3-4	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	✓	✓	✓
MS-ESS3-5	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	✓	✓	
Additional performance expectations addressed:		PS1-4, PS3-3, PS3-4, PS3-5	LS4-1	PS2-4, PS4-1, PS4-2, ETS1-1



Earth Science Core Ideas

		Weather and Water	Earth History	Planetary Science
ESS1.A	The Universe and Its Stars			✓
ESS1.B	Earth and the Solar System	✓		✓
ESS1.C	The History of Planet Earth		✓	✓
ESS2.A	Earth's Materials and Systems		✓	✓
ESS2.B	Plate Tectonics and Large-Scale System Interactions		✓	
ESS2.C	The Roles of Water in Earth's Surface Processes	✓	✓	✓
ESS2.D	Weather and Climate	✓		
ESS3.A	Natural Resources		✓	✓
ESS3.B	Natural Hazards	✓	✓	
ESS3.C	Human Impacts on Earth Systems	✓	✓	✓
ESS3.D	Global Climate Change	✓	✓	
<i>Additional core ideas addressed:</i>		PS1.A, PS3.A, PS3.B, ETS1.A, ETS1.B, ETS1.C	LS4.A	PS2.B, PS4.A, PS4.B, ETS1.A



Life Science Performance Expectations

		Diversity of Life	Populations and Ecosystems	Heredity and Adaptation	Human Systems Interactions
MS-LS1-1	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	✓			✓
MS-LS1-2	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	✓			
MS-LS1-3	Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	✓			✓
MS-LS1-4	Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.	✓			
MS-LS1-5	Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	✓			
MS-LS1-6	Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	✓	✓		
MS-LS1-7	Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	✓	✓		✓
MS-LS1-8	Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.				✓
MS-LS2-1	Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.		✓		
MS-LS2-2	Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.		✓		
MS-LS2-3	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.		✓		
MS-LS2-4	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		✓		
MS-LS2-5	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*		✓		
MS-LS3-1	Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.			✓	
MS-LS3-2	Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	✓		✓	
MS-LS4-1	Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.			✓	
MS-LS4-2	Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.			✓	

*Courses in grey have not yet been published.
Anticipated performance expectation coverage is shown.*



Life Science Performance Expectations *continued*

		Diversity of Life	Populations and Ecosystems	Heredity and Adaptation	Human Systems Interactions
MS-LS4-3	Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.			✓	
MS-LS4-4	Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.			✓	
MS-LS4-5	Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.			✓	
MS-LS4-6	Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.			✓	
<i>Additional performance expectations addressed</i>			ESS3.3, ESS3.4, ETS1.1, ETS1.2		

Life Science Core Ideas

		Diversity of Life	Populations and Ecosystems	Heredity and Adaptation	Human Systems Interactions
LS1.A	Structure and Function	✓			✓
LS1.B	Growth and Development of Organisms	✓	✓		
LS1.C	Organization for Matter and Energy Flow in Organisms	✓	✓		✓
LS1.D	Information Processing				✓
LS2.A	Interdependent Relationships in Ecosystems		✓		
LS2.B	Cycles of Matter and Energy Transfer in Ecosystems		✓		
LS2.C	Ecosystems Dynamics, Functioning, and Resilience	✓	✓		
LS3.A	Inheritance of Traits			✓	
LS3.B	Variation of Traits			✓	
LS4.A	Evidence of Common Ancestry and Diversity			✓	
LS4.B	Natural Selection			✓	
LS4.C	Adaptation			✓	
LS4.D	Biodiversity and Humans		✓		
<i>Additional core ideas addressed:</i>			PS3.D, ESS3.C, ETS1.B		PS3.D

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Anticipated performance expectation coverage is shown.*



FOSS Next Generation



Science and Engineering Practices

	Chemical Interactions	Waves	Electromagnetic Force	Gravity and Kinetic Energy	Variables and Design	Weather and Water	Earth History	Planetary Science	Diversity of Life	Populations and Ecosystems	Heredity and Adaptation	Human Systems Interactions
Asking Questions and Defining Problems	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Developing and Using Models	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Planning and Carrying Out Investigations	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Analyzing and Interpreting Data	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Using Mathematics and Computational Thinking	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Constructing Explanations and Designing Solutions	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Engaging in Argument From Evidence	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Obtaining, Evaluating, and Communicating Information	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓

Crosscutting Concepts

Patterns	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Cause and Effect	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Scale, Proportion, and Quantity	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Systems and System Models	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Energy and Matter	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓
Structure and Function	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓
Stability and Change	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	




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FOSS Next Generation

Recommended K–8 Scope and Sequence

Grade	 Physical Science	 Earth Science	 Life Science
6–8	Waves* Gravity and Kinetic Energy*	Planetary Science	Human Systems Interactions* Heredity and Adaptation*
	Chemical Interactions	Earth History	Populations and Ecosystems
	Electromagnetic Force* Variables and Design*	Weather and Water	Diversity of Life
5	Mixtures and Solutions	Earth and Sun	Living Systems
4	Energy	Soils, Rocks, and Landforms	Environments
3	Motion and Matter	Water and Climate	Structures of Life
2	Solids and Liquids	Pebbles, Sand, and Silt	Insects and Plants
1	Sound and Light	Air and Weather	Plants and Animals
K	Materials and Motion	Trees and Weather	Animals Two by Two

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