Grade 4 Science: Year at a Glance

UNIT 1: WEATHERING AND EROSION					Instructional days: 9	
Performance Expectations	**Learning Goals (Foundation Box)**			**Connections to the CCSS – ELA**	**Connections to the CCSS – Mathematics**	
	Disciplinary Core Ideas	Science and Engineering Practices	Crosscutting Concepts			
4-ESS2-1	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	ESS2.A ESS2.E	Planning and Carrying Out Investigations	Cause and Effect	W.4.7 W.4.8	MP.2 MP.4 MP.5 4.MD.A.1 4.MD.A.2
4-ESS1-1	Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation from changes in a landscape over time.	ESS1.C	Constructing Explanations and Designing Solutions	Patterns	W.4.7 W.4.8 W.4.9	MP.2 MP.4 4.MD.A.1

Teacher Notes

Instructional implementation is based on a 100-day time frame—for example, 33 weeks of instruction x 3 days per week = 99 days + 1 = 100 days of instruction. This time frame assumes a 45–60 minute instruction block. Teachers should calculate the instructional days based on their time frame.

* Indicates connection to Engineering

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UNIT 2: EARTH PROCESSES				**Instructional days: 12**	
Performance Expectations	**Learning Goals** (Foundation Box)			**Connections to the CCSS – ELA**	**Connections to the CCSS – Mathematics**
	Disciplinary Core Ideas	**Science and Engineering Practices**	**Crosscutting Concepts**		
4-ESS2-2 — Analyze and interpret data from maps to describe patterns of Earth's features.	ESS2.B	Analyzing and Interpreting Data	Patterns	RI.4.7	4.MD.A.2
4-ESS3-2* — Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*	ESS3.B ETS1.B	Constructing Explanations and Designing Solutions	Cause and Effect	RI.4.1 RI.4.9	MP.2 MP.4 4.OA.A.1
3-5-ETS1-2 — Generate and compare multiple solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	ETS1.B	Constructing Explanations and Designing Solutions		RI.4.1 RI.4.7 RI.4.9	MP.2 MP.4 MP.5 3-5.OA
3-5-ETS1-3 — 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.	ETS1.B ETS1.C	Planning and Carrying Out Investigations		W.4.7 W.4.8 W.4.9	MP.2 MP.4 MP.5
Teacher Notes					

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UNIT 3: STRUCTURES AND FUNCTION					Instructional days: 9	
Performance Expectations	**Learning Goals** (Foundation Box)			**Connections to the CCSS – ELA**	**Connections to the CCSS – Mathematics**	
	Disciplinary Core Ideas	**Science and Engineering Practices**	**Crosscutting Concepts**			
4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	LS1.A	Engaging in Argument from Evidence	Systems and System Models	W.4.1	4.G.A.3	
Teacher Notes						

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UNIT 4: HOW ORGANISMS PROCESS INFORMATION					Instructional days: 9
Performance Expectations	**Learning Goals** (Foundation Box)			**Connections to the CCSS – ELA**	**Connections to the CCSS – Mathematics**
	Disciplinary Core Ideas	**Science and Engineering Practices**	**Crosscutting Concepts**		
4-LS1-2	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.	LS1.D	Developing and Using Models	Systems and System Models	SL.4.5	
4-PS4-2	Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	PS4.B	Developing and Using Models	Cause and Effect	SL.4.5	MP.4 4.G.A.1
Teacher Notes					

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UNIT 5: TRANSFER OF ENERGY						Instructional days: 12
Performance Expectations	**Learning Goals** (Foundation Box)			**Connections to the CCSS – ELA**	**Connections to the CCSS – Mathematics**
	Disciplinary Core Ideas	Science and Engineering Practices	Crosscutting Concepts		
4-PS3-2	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.	PS3.A PS3.B	Planning and Carrying Out Investigations	Energy and Matter	W.4.7 W.4.8	
4-ESS3-1	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	ESS3.A	Obtaining, Evaluating, and Communicating Information	Cause and Effect	W.4.7 W.4.8 W.4.9	MP.2 MP.4 4.OA.A.1
Teacher Notes						

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UNIT 6: FORCE AND MOTION					Instructional days: 18	
Performance Expectations	**Learning Goals (Foundation Box)**			**Connections to the CCSS – ELA**	**Connections to the CCSS – Mathematics**	
	Disciplinary Core Ideas	**Science and Engineering Practices**	**Crosscutting Concepts**			
4-PS3-1	Use evidence to construct an explanation relating the speed of an object to the energy of that object.	PS3.A	Constructing Explanations and Designing Solutions	Energy and Matter	RI.4.1 RI.4.3 RI.4.9 W.4.2 W.4.8 W.4.9	
4-PS3-3	Ask questions and predict outcomes about the changes in energy that occur when objects collide.	PS3.A PS3.B PS3.C	Asking Questions and Defining Problems	Energy and Matter	W.4.7 W.4.8	
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UNIT 7: USING ENGINEERING DESING WITH FORCE AND MOTION SYSTEMS					Instructional days: 21	
Performance Expectations	**Learning Goals (Foundation Box)**			**Connections to the CCSS – ELA**	**Connections to the CCSS – Mathematics**	
	Disciplinary Core Ideas	**Science and Engineering Practices**	**Crosscutting Concepts**			
4-PS3-4* — Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*	PS3.B PS3.D ETS1.A	Constructing Explanations and Designing Solutions	Energy and Matter	W.4.7 W.4.8	4.OA.A.3	
3-5-ETS1-1 — Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	ETS1.A	Asking Questions and Defining Problems		W.4.7 W.4.8 W.4.9	MP.2 MP.4 MP.5 3-5.OA	
3-5-ETS1-2 — 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.	ETS1.B	Constructing Explanations and Designing Solutions		RI.4.1 RI.4.7 RI.4.9	MP.2 MP.4 MP.5 3-5.OA	
3-5-ETS1-3 — 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.	ETS1.B ETS1.C	Planning and Carrying Out Investigations		W.4.7 W.4.8 W.4.9	MP.2 MP.4 MP.5	
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UNIT 8: WAVES AND INFORMATION					Instructional days: 18	
Performance Expectations		Learning Goals (Foundation Box)			Connections to the CCSS – ELA	Connections to the CCSS – Mathematics
		Disciplinary Core Ideas	Science and Engineering Practices	Crosscutting Concepts		
4-PS4-1	Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	PS4.A	Developing and Using Models	Patterns	SL.4.5	MP.4 4.G.A.1
4-PS4-3*	Generate and compare multiple solutions that use patterns to transfer information.*	PS4.C ETS1.C	Constructing Explanations and Designing Solutions	Patterns	RI.4.1 RI.4.9	
3-5-ETS1-2	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.	ETS1.B	Constructing Explanations and Designing Solutions		RI.4.1 RI.4.7 RI.4.9	MP.2 MP.4 MP.5 3.5.OA
3-5-ETS1-3	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.	ETS1.B ETS1.C	Planning and Carrying Out Investigations		W.4.7 W.4.8 W.4.9	MP.2 MP.4 MP.5
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