

4th Grade Science MLS Curriculum Year-At-A-Glance

<p>Engineering, Technology, and Application of Science</p> <p><i>Engineering Standards should be ongoing and continually integrated into science lessons/units.</i></p> <p>Standards should be recorded in Q1 & Q2</p> <p><i>The ETS standards are written as a 3-5 grade span end point. Therefore, by the end of grade 5, students should be proficient in these skills.</i></p>	<p>Earth & Space Science</p> <p>Unit 1: Earth’s Place in the Universe</p> <p>Estimated Teaching Window: August - September</p> <p>Standards should be recorded in Q1</p>	<p>Physical Science</p> <p>Unit 2: Motion and Stability: Forces and Interactions</p> <p>Estimated Teaching Window: October - December</p> <p>Standards should be recorded in Q2</p>	<p>Life Science</p> <p>Unit 3: From Molecules to Organisms: Structure and Processes</p> <p>Estimated Teaching Window: January - March</p> <p>Standards should be recorded in Q3</p>
<p>Essential Standard: Understand and use scientific and engineering practices to conduct investigations and solve problems.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. (MLS: 4.ETS1.A.1, NGSS: 3-5-ETS1-1) 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. (MLS: 4.ETS1.B.1, NGSS: 3-5-ETS1-2) 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. (MLS: 4.ETS1.C.1, NGSS: 3-5-ETS1-3) 	<p>Essential Standard: Investigate and analyze Earth’s physical changes.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. (MLS: 4.ESS1.C.1, NGSS: 4-ESS1-1) Plan and conduct scientific investigations or simulations to provide evidence of how natural processes (e.g. weathering and erosion) shape Earth’s surface. (MLS: 4.ESS2.A.1, NGSS: Not in NGSS) Analyze and interpret data from maps to describe patterns of Earth’s features. (MLS:4.ESS2.B.1, NGSS: 4-ESS2-2) Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. (MLS: 4.ESS3.A.1, NGSS: 4-ESS3-2) <p>Essential Standard: Understand and use scientific and engineering practices to conduct investigations and solve problems.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. (MLS: 4.ETS1.A.1, NGSS: 3-5-ETS1-1) 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. (MLS: 4.ETS1.B.1, NGSS: 3-5-ETS1-2) 	<p>Essential Standard: Investigate and explain force in motion and the transfer of energy.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> Analyze data to determine how the motion of an object changed by an applied force or the mass of an object. (MLS: 2.PS2.A.1, NGSS: Not in NGSS) Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion. (MLS: 4.PS2.A.1, NGSS: 3-PS2-2) Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. (MLS: 4.PS2.A.2, NGSS: 3-PS2-1) 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). (MLS: 4.PS2.B.1, NGSS: Not in NGSS) 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. (MLS: 4.PS2.B.2), NGSS: Not in NGSS) Use evidence to construct an explanation relating the speed of an object to the energy of that object. (MLS: 4.PS3.A.1, NGSS: 4-PS3-1) Provide evidence to construct an explanation of an energy transformation (e.g. temperature change, light, sound, motion, and magnetic effects). (MLS: 4.PS3.B.1, NGSS: Not in NGSS) Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. (MLS: 4.PS3.B.2, NGSS: 4-PS3-4) <p>Essential Standard: Understand and use scientific and engineering practices to conduct investigations and solve problems.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> Define a simple design problem reflecting a need or a want that includes specified criteria for success and 	<p>Essential Standard: Identify plant and animal structures and functions necessary for survival.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and plant reproduction. (MLS: 4.LS1.A.1, NGSS: 4-LS1-1) 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. (MLS: 4.LS1.D.1, NGSS: 4-LS1-2)

		<p>constraints on materials, time, or cost. (MLS: 4.ETS1.A.1, NGSS: 3-5-ETS1-1)</p> <ul style="list-style-type: none"> ● 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. (MLS: 4.ETS1.B.1, NGSS: 3-5-ETS1-2) ● 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. (MLS: 4.ETS1.C.1, NGSS: 3-5-ETS1-3) 	
<p align="center">Physical Science Unit 4: Waves and Their Applications in Technologies for Information Transfer</p> <p align="center">Estimated Teaching Window: March - May <i>Standards should be recorded in Q4</i></p>			
<p>Essential Standard: Analyze the characteristics of waves.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> ● Develop a model of waves to describe patterns in terms of amplitude or wavelength and that waves can cause objects to move. (MLS: 4.PS4.A.1, NGSS: 4-PS4-1) ● Develop a model to describe that objects can be seen only when light is reflected off them or when they produce their own light. (MLS: 5.PS4.A.1, NGSS: 4-PS4-2) 			