

6th Grade Science Lee's Summit Curriculum Year at a Glance

<p style="text-align: center;">Engineering, Technology, and Application of Science</p> <p style="color: red; font-size: small;"><i>Engineering Standards should be ongoing and continually integrated into science lessons/units.</i></p> <p style="text-align: center; font-size: small;">Standards should be recorded in Q2, 3, 4</p> <p style="font-size: x-small;"><i>The ETS standards are written as a 6-8 grade span end point. Therefore, by the end of grade 8, students should be proficient in these skills.</i></p>	<p style="text-align: center;">Life Science</p> <p style="text-align: center;">Unit 1: From Molecules to Organisms: Structure and Function of Cells</p> <p style="font-size: small;">Estimated Teaching Window: August-October <i>Standards should be recorded in 1st Q</i></p>	<p style="text-align: center;">Life Science</p> <p style="text-align: center;">Unit 2: From Molecules to Organism: Animals and Plants</p> <p style="font-size: small;">Estimated Teaching Window: October-December <i>Standards should be recorded in 2nd Q</i></p>	<p style="text-align: center;">Life Science</p> <p style="text-align: center;">Unit 3: Biological Evolution: Unity and Diversity</p> <p style="font-size: small;">Estimated Teaching Window: December-March <i>Standards should be recorded in 3rd Q</i></p>	<p style="text-align: center;">Life Science</p> <p style="text-align: center;">Unit 4: Ecosystems: Interaction, Energy, and Dynamics</p> <p style="font-size: small;">Estimated Teaching Window: March-May <i>Standards should be recorded in 4th Q</i></p>
<p>Essential Standard: Students will understand and use scientific and engineering practices, tools and instruments to conduct investigations and solve problems.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> ● 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. (MLS: 6-8.ETS1.A.1, NGSS: MS-ETS1-1) ● Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. (MLS: 6-8.ETS1.B.1, NGSS: MS-ETS1-2) ● 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. (MLS: 6-8.ETS1.B.2, NGSS: MS-ETS1-3) ● 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. (MLS: 6-8.ETS1.B.3, NGSS: MS-ETS1-4) 	<p>Essential Standard: Students will gather information and explain the basic understanding of the role of cells in body systems and how those systems work to support the life functions of the organism.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> ● Provide evidence that organisms (unicellular and multicellular) are made of cells and that a single cell must carry out all of the basic functions of life. (MLS: 6-8.LS1.A.1, NGSS: MS-LS1-1) ● Develop and use a model to describe the function of a cell as a whole and ways parts of the cells contribute to that function. (MLS: 6-8.LS1.A.2, NGSS: MS-LS1-2) ● Develop an argument supported by evidence for how multicellular organisms are organized by varying levels of complexity: cells, tissue, organs, and organ systems. (MLS: 6-8.LS1.A.3, NGSS: MS-LS1-3) ● Present evidence that body systems interact to carry out key body functions, including providing nutrients and oxygen to cells, removing carbon dioxide and waste from cells and the body, controlling body motion/activity and coordination, and protecting the body. (MLS: 6-8.LS1.A.4, NGSS: MS-LS1-3) 	<p>Essential Standard: Students will use argument based evidence and scientific reasoning to support an explanation for how characteristics of animal behavior and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> ● Construct an explanation for how characteristic animal behaviors as well as specialized plant structures affect the probability of successful reproduction of animals and plants respectively. (MLS: 6-8.LS1.B.1, NGSS: MS-LS1-4) ● Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. (MLS: 6-8.LS1.B.2, NGSS: MS-LS1-5) <p>Essential Standard: Students will 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.</p> <p>Learning Target:</p> <ul style="list-style-type: none"> ● Construct a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms. (MLS: 6-8.LS1.C.1, NGSS: MS-LS1-6) <p>Essential Standard: Students will understand and use scientific and engineering practices, tools and instruments to conduct investigations and solve problems.</p> <p>Learning Target: Engineering, Technology, and Application of Science</p>	<p>Essential Standard: Students will construct explanations based on evidence to support fundamental understanding of natural selection and evolution using ideas of genetic variations, fossil records, and anatomical similarities of the relationship among organisms.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> ● Analyze and interpret evidence from the fossil record to infer patterns of environmental change resulting in extinction and changes to life forms throughout the history of the Earth. (MLS: 6-8.LS4.A.1, NGSS: MS-LS4-1) ● 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. (MLS: 6-8.LS4.B.1, NGSS: MS-LS4-4) ● Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. (MLS: 6-8.LS4.B.2, NGSS: MS-LS4-5) ● Interpret graphical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. (MLS: 6-8.LS4.C.1, NGSS: MS-LS4-6) <p>Essential Standard: Students will understand and use scientific and engineering practices, tools and instruments to conduct investigations and solve problems.</p> <p>Learning Target: Engineering, Technology, and Application of Science</p> <ul style="list-style-type: none"> ● Analyze data from tests to determine similarities and differences among several design solutions to identify the best 	<p>Essential Standard: Students will analyze and interpret data, develop models, and construct arguments to demonstrate a deeper understanding of resources in the cycling of matter in the flow of energy in ecosystems.</p> <p>Learning Targets:</p> <ul style="list-style-type: none"> ● Analyze and interpret data to provide evidence for the effects of resource availability on individual organisms and populations of organisms in an ecosystem. (MLS: 6-8.LS2.A.1, NGSS: MS-LS2-1) ● Construct an explanation that predicts the patterns of interactions among and between the biotic and abiotic factors in a given ecosystem. (MLS: 6-8.LS2.A.2, NGSS: MS-LS2-2) ● Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. (MLS: 6-8.LS2.B.1, NGSS: MS-LS2-3) ● Construct an argument supported by empirical evidence that explains how changes to physical or biological components of an ecosystem affect populations. (MLS: 6-8.LS2.C.1, NGSS: MS-LS2-4) ● Evaluate benefits and limitations of differing design solutions for maintaining an ecosystem. (MLS: 6-8.LS2.C.2, NGSS: MS-LS2-5) <p>Essential Standard: Students will understand and use scientific and engineering practices, tools and instruments to conduct investigations and solve problems.</p> <p>Learning Targets: Engineering, Technology, and Application of Science</p> <ul style="list-style-type: none"> ● Evaluate competing design solutions

		<ul style="list-style-type: none">• 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. (MLS: 6-8.ETS1.B.3, NGSS: MS-ETS1-4)	characteristics of each that can be combined into a new solution to better meet the criteria for success. (MLS: 6-8.ETS1.B.2, NGSS: MS-ETS1-3)	<p>using a systematic process to determine how well they meet the criteria and constraints of the problem. (MLS: 6-8.ETS1.B.1, NGSS: MS-ETS1-2)</p> <ul style="list-style-type: none">• 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. (MLS: 6-8.ETS1.A.1, NGSS: MS-ETS1-1)
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