Grade 6 Next Generation Science Standards
Course Pacing Guide

Narrative and Rationale: The Next Generation Science Standards promote a vision for science education in which students learn science and engineering by doing science and engineering—like real-life scientists and engineers.

The Mi-STAR Unit Progression Model (UPM) lays out a path to student mastery of the middle school NGSS grade-band, through 22 bundles that are in development to become Mi-STAR units. The dimensions of NGSS are sequenced across each year and between years to create a coherent progression that builds on students' prior knowledge and skills. Each bundle in the sequence is connected to a 21st century theme that will serve as the basis for a Unit Challenge—a problem or issue that the students attempt to solve or address throughout the course of a unit.

Bundle 6.1 Protecting our Communities Water through Land Use ~ 5 weeks	Bundle 6.2 Investigating and Modeling Body Systems ~ 6 weeks	Bundle 6.3 Chemical Processes in Organism Digestion ~ 6 weeks	Bundle 6.4 Forces and Motion ~6 weeks	Bundle 6.5 Plant Growth ~ 5 weeks	Bundle 6.6 Managing Invasive Species to Protect Ecosystem Interactions ~5 weeks	Bundle 6.7 Cycling of Matter and Energy through Food Webs ~5 weeks
Pearson Resources Water p. 8-9 Water p. 118-129 Forces p. 136-141	Pearson Resources Cells p. 4-21	Pearson Resources Cells p.44-55 Chemistry p.5-9, 80-129, 165-181, 213-229	Pearson Resources Forces p.4-7 Forces p.32-35 Forces p.48-51	Pearson Resources Cells p.86-91 Ecology p.4-9 Ecology p.15-17	Pearson Resources Ecology p. 4-34 Ecology p.92-159	Pearson Resources Ecology p. 42-55
Bundle Question How does human development affect how water moves through our community?	Bundle Question How does a mystery pathogen make people sick and how can we come up with a treatment plan?	Bundle Question How do we choose foods to address digestion problems?	Bundle Question How can we design a case that protects a cell phone from breaking?	Bundle Question How can we maintain the biggest supply of fresh food in places where plants do not naturally grow?	Bundle Question What can cause the number of organisms in an ecosystem to increase, decrease, or disappear over time? How and why do ecosystems change, and why is it important to us?	Bundle Question How can we use old food to make new food?

NGSS Standards	NGSS Standards	NGSS Standards	NGSS Standards	NGSS Standards	NGSS Standards	NGSS Standards
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-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-ETS1-1** 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-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-ETS1-3** 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-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-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-PS1-5** 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-ETS1-1** 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-LS1-5** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. **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-LS2-1** 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-LS2-4** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. **MS-ETS1-2** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	**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-LS2-3** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

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