



Science (Grade 5)

Course Description:

The curriculum for this course is developed from the [Next Generation Science Standards](#). In this course, fifth grade students will continue to develop an understanding of the four disciplinary core ideas: physical sciences; life sciences; earth and space sciences; and engineering, technology, and application of science. Students will be able to demonstrate grade-appropriate proficiency in gathering, describing, and using information about the natural and designed world(s).

Essential Understandings:

1. Scientists ask questions, define problems, and specify qualitative relationships based on observations to find more information about the natural and/or designed world(s). (3-5-ETS1-1)
2. Using, developing, building, and revising models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) represent concrete events or design solutions. (5-PS1-1, 5-PS3-1, 5-LS2-1, 5-ESS2-1, 3-5-ETS1-1)
3. Investigations that control variables and provide evidence to support explanations or design solutions are planned and carried out to answer questions or test solutions to problems. (5-PS1-4, 3-5-ETS1-2, 3-5-ETS1-2)
4. Information from observations is collected, recorded, and shared through multiple trials of quantitative and qualitative approaches in order to analyze and interpret data. (5-PS1-2, 5-PS1-3, 5-ESS2-2, 5-ESS1-2)
5. Evidence and ideas that specify variables are used to construct explanations and predictions of natural phenomena and design multiple solutions to problems. (3-5-ETS1-2, 3-5-ETS1-3)
6. Arguments from evidence are constructed by comparing ideas and representations, critiquing scientific explanations or solutions, and citing relevant evidence about the natural and designed world(s). (5-LS1-1, 5-PS2-1, 5-ESS1-1)
7. Observations and texts are used to obtain, evaluate, communicate, and evaluate the merit and accuracy of ideas and methods from new information. (5-PS1-4, 5-ESS3-1, 3-5-ETS1-2)

Unit	Description of Unit and Learning Targets
Structure and Properties of Matter • How are new substances created by combining other substances? • When matter changes, how does its weight change?	Students will develop an understanding of the idea that regardless of the type of change that matter undergoes, the total weight of matter is conserved. Students determine whether the mixing of two or more substances results in new substances. <u>Learning Targets:</u> • I can develop a model to describe that matter is made of particles too small to be seen. • I can measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. • I can make observations and measurements to identify materials based on their properties. • I can conduct an investigation to determine whether the mixing of two or more substances results in new substances.
Matter and Energy in Organisms and Ecosystems • How does matter cycle through ecosystems? • Where does the energy in food come	Students will describe the movement of matter among plants, animals, decomposers, and the environment and that energy in animals' food was once energy from the sun. <u>Learning Targets:</u> • I can use models to describe that energy in animals' food

from and what is it used for?	(used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. • I can support an argument that plants get the materials they need for growth chiefly from air and water. • I can develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
Earth's Systems • How much water can be found in different places on Earth?	Students will be able to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. They will also describe and graph data to provide evidence about the distribution of water on Earth and an understanding of the idea that plants get the materials they need for growth chiefly from air and water. <u>Learning Targets:</u> • I can develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. • I can describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. • I can obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
Space Systems: Stars and the Solar System • How does the appearance of some stars change in different seasons? • How do lengths and directions of shadows or relative lengths of day and night change from day to day?	Students will develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. <u>Learning Targets:</u> • I can support an argument that the gravitational force exerted by Earth on objects is directed down. • I can support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth. • I can represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
Engineering Design • How do engineers design and carry out an investigation? • What are the benefits to generating and comparing multiple solutions to a problem?	Students will design and carry out investigations by generating and comparing multiple solutions to problems. <u>Learning Targets:</u> • I can define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. • I can 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. • I can 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.