



Science - Grade 6

Course Description:

The Indian Community School cultivates an enduring cultural identity and critical thinking by weaving indigenous teachings with a distinguished learning environment. The curriculum for this course is developed from the [Next Generation Science Standards](#) and the framework of the [ICS Our Ways Cultural Calendar](#). In this course, students are part of a spiraling curriculum in which aspects of life science, physical science, earth/space science, and engineering/technology are addressed each school year. In grade six, the life science topics include the structures of organisms and how they grow, develop, and reproduce. The physical science topics include how energy is transferred from one object or system to another. The earth/space science topics include the roles of water in the Earth surface processes and determining factors that impact weather and climate. Engineering design and human impact is covered in all aspects of the curriculum.

Enduring Understandings:

- Scientists plan an investigation to analyze and observe the transfer of energy to help support a claim.
- The engineering design process is used to design, evaluate, and analyzed solutions to problems.
- Scientists use research and modeling to identify the basic functions of organisms and how they reproduce.
- Scientists use the Scientific Method to investigate and design experiments to determine how organisms react to stimuli to generate behaviors.
- Scientists use data collected through simulations to determine how traits are distributed and analyze genetic factors.
- Scientists develop a model to demonstrate understanding of the water cycle process.
- Scientists explore the effects of water on the Earth and make connections to Earth Process Systems.
- Scientists plan and investigate factors that have contributed to global systems related to climate.
- Reading in the content areas requires interaction and interpretation of various discipline-specific texts in order to integrate and evaluate content, build knowledge, make meaning, construct evidence-based arguments, and select reliable and relevant resources for research.
- Writing in the content areas requires clear and coherent written products which are planned and developed with supporting evidence to demonstrate focused understanding of composition, written expression, and usage/mechanics in order to communicate a discipline-specific purpose to an appropriate audience.

PHYSICAL SCIENCE

- I can construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass and speed of an object. (MS-PS3-1)
- I can develop a model that shows that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system. (MS-PS3-2)
- I can design, construct, and test a device that either minimizes or maximizes thermal energy transfer. (MS-PS3-3)
- I can plan an investigation to determine the relationships among the energy transferred, type of matter, mass, and change in the average kinetic energy of the particles as measured by the temperature of the sample. (MS-PS3-4)
- I can construct, use, and present arguments to support the claim that when the kinetic energy of an object



changes, energy is transferred to or from the object. (MS-PS3-5)

LIFE SCIENCE

- I can conduct an investigation to provide evidence that living things are made of cells. (MS-LS1-1)
- I can identify characteristics of living things with one cell or many different numbers and types of cells. (MS-LS1-1)
- I can develop and use a model to describe the function of a cell as a whole. (MS-LS1-2)
- I can identify the ways the parts of cells contribute to the function. (MS-LS1-2)
- I can support with evidence how the body is a system of interacting subsystems composed of groups of cells. (MS-LS1-3)
- I can gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. (MS-LS1-8)

EARTH AND SPACE SCIENCE

- I can 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-ESS2-4)
- I can collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. (MS-ESS2-5)
- I can develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. (MS-ESS2-6)
- I can analyze and interpret data on natural hazards to forecast future catastrophic events. (MS-ESS3-2)
- I can use this information to inform the development of technologies to mitigate their effects. (MS-ESS3-2)
- I can apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. (MS-ESS3-3)

ENGINEERING, TECHNOLOGY, AND APPLICATIONS OF SCIENCE

- I can define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution. (MS-ETS1-1)
- I can take into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. (MS-ETS1-1)
- I can evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. (MS-ETS1-2)
- I can analyze data from tests to determine similarities and differences among several design solutions. (MS-ETS1-3)
- I can identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. (MS-ETS1-3)
- I can 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. (MS-ETS1-4)



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COURSE OVERVIEW