



Science Course Descriptions Kindergarten – 5th Grade

Kindergarten

In the kindergarten curriculum, students begin their science foundation. Much emphasis is placed on the 5 senses to help students become scientific observers. In the Life Science unit, students explore the concepts of the structures of birds, fish, snails, earthworms and isopods. Students learn what animals need to survive and the relationship between their needs and where they live. In the Physical Science unit, students begin with a study of natural resources and properties of materials and how those properties determine their use. Students come to understand that humans use natural resources for everything they do and that people affect the world around them. Students will use those materials to build structures, applying physical science core ideas of energy transfer. Students will then apply their knowledge of the materials to investigate pushes and pulls and explore variables to achieve a specific outcome. In the Earth Science unit, students develop an understanding of what plants (and animals) need to survive and the relationship between their needs and where they live. Students will engage in observing weather over the course of the year, as well as the impact weather has on living things. As students monitor the local weather, they will experience the patterns and variations in weather and come to understand the importance of weather forecasts to prepare for severe weather. Throughout the course, students learn to engage in Science and Engineering Practices and Cross-Cutting Concepts that help them make connections across scientific concepts and broaden their scientific skills and processes for future problem solving. See attachment for the Next Generation of Science Standards Engineering Practices and Cross-Cutting Concepts.

1st Grade

In the first grade curriculum, students extend their understanding of concepts they studied in previous years. In the Life Science unit, the anchor phenomenon are that young plants and animals have structures and behaviors that help them grow and survive. They will also explore the phenomenon of variation in the same kind of organism, including variation between young and adults. In the Physical Science unit, students will explore how to observe and manipulate the anchor phenomena of sound and light. Students will use simple tools and instruments to find out how sound and light interact with objects. In the Earth Science unit, students explore the anchor phenomenon that objects in the sky change position in predictable ways. They explore the natural world by using simple instruments and calendars to observe and monitor change. They use new tools and methods to build on their understanding of the weather and to find out about properties of air by exploring how objects interact with air. Students make connections to the daily movement of the the Sun in the sky. Throughout the course, students engage in Science and Engineering Practices and Cross-Cutting Concepts that help them make connections across scientific concepts and broaden their scientific skills and processes for future problem solving. See attachment for the Next Generation of Science Standards Engineering Practices and Cross-Cutting Concepts.

2nd Grade

In the second grade curriculum, students extend their understanding of concepts they studied in previous years. In the Life Science unit, the anchor phenomenon is the natural history of common insects and their

interactions with plants. Students will compare structures and functions of species to reveal patterns. Students gain experience with the ways that plants and insects interact with feeding relationships, pollination and seed dispersal. In the Physical Science unit, students explore the anchor phenomenon of matter in two of its phases--solid and liquid. Students will explore how solid and liquid materials are similar and different, how the properties of solid and liquid materials relate to how they can be used and how they can change. In the Earth Science unit, students explore the anchor phenomenon of earth materials that cover the planet's surface. Students will explore and the properties of earth materials and how they interact and change. Throughout the course, students engage in Science and Engineering Practices and Cross-Cutting Concepts that help them make connections across scientific concepts and broaden their scientific skills and processes for future problem solving. See attachment for the Next Generation of Science Standards Engineering Practices and Cross-Cutting Concepts.

3rd Grade

In the third grade curriculum, students extend their understanding of concepts they studied in previous years. In the Life Science unit, students explore the concepts that plants and animals are organisms and exhibit a variety of strategies for life, organisms are complex and have a variety of observable structures and behaviors, organisms have varied, but predictable life cycles and reproduce their own kind, and individuals have variations in their traits that may provide an advantage to surviving in their habitats. In the Physical Science unit, students work with forces and interactions, matter and its interactions, and with engineering design. Magnetism and gravity are the forces and interactions they explore as they look for patterns of motion to predict future motion. Students also use metric tools to refine observations by measuring mass and volume, make mixtures and solutions to develop a foundational understanding of the conservation of mass, and observe a simple chemical reaction to extend their understanding of conservation. In the Earth Science unit, students explore how water is the most important substance on Earth. Students are provided with opportunities to explore the properties of water, the water cycle and weather, interactions between water and other Earth materials, and how humans use water as a natural resource. Throughout the course, students engage in Science and Engineering Practices and Cross-Cutting Concepts that help them make connections across scientific concepts and broaden their scientific skills and processes for future problem solving. See attachment for the Next Generation of Science Standards Engineering Practices and Cross-Cutting Concepts.

4th Grade

In the fourth grade curriculum, students extend their understanding of concepts they studied in previous years. In the Life Science unit, students study the structures and relationships between one organism and its environment while extending knowledge of all organisms. Students are expected to make connections with how humans can change environments. In the Physical Science unit, students explore the anchor phenomenon of energy. Students explore that energy is present whenever there is motion, electric current, sound, light or heat and that energy can transfer from one place to another. In the Earth Science unit, students explore the anchor phenomenon of the surface of the Earth's landscape--the shape and the composition of landforms. Students will explore the phenomena of weathering by water, ice, wind, living organisms, gravity breaking rocks into smaller pieces, erosion and deposition. Throughout the course, students engage in Science and Engineering Practices and Cross-Cutting Concepts that help them make connections across scientific concepts and broaden their scientific skills and processes for future problem solving. See attachment for the Next Generation of Science Standards Engineering Practices and Cross-Cutting Concepts.

5th Grade

Fifth grade science includes three units covering earth and space science (Earth and Sun), physical science (Mixtures and Solutions), and life science (Living Systems). Earth and Sun is an exploration of

the geosphere, the hydrosphere, the atmosphere, and space. Students gain an understanding of earth's rotation by studying shadows and moon's revolution around the earth by creating models and studying moon's phase changes over several weeks. Students use observation and apply their knowledge of earth's rotation and revolution in order to explain why stars appear to change in the night sky. Students compare and contrast the size and distance of Earth, moon, and sun, and the various differences among objects in space. Students study the sun's energy transfer through observations and designing investigations. Earth's atmosphere is explored through a study of the water cycle, weather patterns, climate change, and global warming. Mixtures and Solutions begins with an exploration of creating and separating mixtures. Students use modeling to demonstrate their understanding of dissolving, melting, and saturation. By designing experiments, students compare the relative saturation of mystery solutions. Students observe chemical reactions and the effects of mixing substances with water and prove that new substances are created. Living Systems begins with students exploring and creating food chains and food webs. Students explore and compare animal digestive systems with plant photosynthesis, and students set up experiments with wheat seed plants to further explore plant photosynthesis. Wheat seeds are also used to demonstrate plant vascular systems and students compare and contrast this with human circulatory and respiratory systems. Human nervous system is explored through stimulus and response experimentation. Animal instincts, learned behavior, and plant and animal adaptations are examined and simulated to help explain how organisms survive.