

Dennis-Yarmouth Regional School District
Science Scope and Sequence
Grade 4

| Unit Name | Unit Description / Overview | Stage 1: Desired Results Enduring Understandings - Students will understand that... | Essential Questions | Standards |
|--|---|--|---|---|
| Master Unit 1 Energy | In this science unit, students explore the world of energy. Students learn what energy is, the different ways that energy is transferred from place to place, and the ways energy can be converted from one type to another. | The speed of an object directly relates to its amount of energy. Energy can be transferred in different modes. Changes in energy occur when objects come in contact with each other. | How does the speed of an object relate to the energy of that object? Can energy move from place to place? What happens to energy when two objects meet? | 4.3-5-ETS1-5(MA). Evaluate relevant design features that must be considered in building a model or prototype of a solution to a given design problem. 4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object. 4-PS3-2. Make observations to show that energy can be transferred from place to place by sound, light, heat, and electric currents. 4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide. 4-PS3-4. Apply scientific principles of energy and motion to test and refine a device that converts kinetic energy to electrical energy or uses stored energy to cause motion or produce light or sound. |
| Master Unit 2 From Molecules to Organism: Structures and Processes | This unit instructs the students on the relationship between structures found internally and externally in plants and animals with their functions to allow those organisms to survive in their environments. It is a major recurring Science theme which spirals through the grade levels. | Plants and Animals have specific internal and external characteristics, such as legs, wings, or stems and bark, etc. These characteristics help them to survive. The processes of survival include: growth, feeding habits, many behaviors such as nesting, baring teeth, plants reaching toward the light, etc., and reproduction. | What characteristics do Plants and Animals have? How do those characteristics help them to survive? What do Plants and Animals do to survive? | 4-LS1-1. Construct an argument that animals and plants have internal and external structures that support their survival, growth, behavior, and reproduction. |
| Master Unit 3 Earth and Human Activity | Grade 4 students interpret patterns of change over time as related to the deposition and erosion in landscape formation. With that change comes a shift in availability of natural resources, both renewable and non-renewable. Students learn ideas to reduce the impact of humans and natural disasters in order to conserve those resources. | Humans consume certain types of energy and fuels that are derived from different sources. Humans are affected by natural disasters. Humans do design ways to protect life and property from those disasters. | What fuels and types of energy do humans use? What are the origins of those fuels and types of energy? How do natural disasters impact Humans? How can Humans protect themselves from those disasters? | 4-ESS3-1. Obtain information to describe that energy and fuels humans use are derived from natural resources and that some energy and fuel sources are renewable and some are not. 4-ESS3-2. Evaluate different solutions to reduce the impacts of a natural event such as an earthquake, blizzard, or flood on humans. |

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| Master Unit 4 Earth and Space | <p>In Grade 4, students interpret patterns of change over time as related to the deposition and erosion in landscape formation. They study today's landscapes to provide evidence for past processes. The unit includes investigations into the different types of physical weathering that cause erosion. It then investigates the process and effects of deposition and concludes with reasoning about the processes by which sample landforms were made. It is important to help students understand that weathering and erosion are two different concepts.</p> | <p>Landscapes are formed due to movement of materials. The source of those materials come from breaking down materials by forces of wind and/or water.</p> | <p>How were the landscapes on Earth formed? How are materials made that move to form landscapes? What causes changes to landscapes where we live?</p> | <p>4-ESS1-1. Use evidence from a given landscape that includes simple landforms and rock layers to support a claim about the role of erosion or deposition in the formation of the landscape over long periods of time. 4-ESS2-1. Make observations and collect data to provide evidence that rocks, soils, and sediments are broken into smaller pieces through mechanical weathering and moved around through erosion by water, ice, wind, and vegetation. 4-ESS2-2. Analyze and interpret maps of Earth's mountain ranges, deep ocean trenches, volcanoes, and earthquake epicenters to describe patterns of these features and their locations relative to boundaries between continents and oceans.</p> |
| Master Unit 5 Waves & Their Applications | <p>In the Energy unit, the students learned about types of energy and how it is transferred between objects. The pattern of energy travel was introduced. This unit will focus on the motion of energy, the types of waves and their structure, and further applications of waves such as in coding and communication.</p> | <p>Energy, such as sound and light travels in waves. Waves of energy travel with predictable, regular patterns. Energy patterns may be designed to transfer information.</p> | <p>How do waves travel Can information be transferred by waves?</p> | <p>4-PS4-1. Develop a model of a simple mechanical wave (including sound) to communicate that waves (a) are regular patterns of motion along which energy travels, and (b) can cause objects to move. 4-PS4-2. Develop a model to describe that light must reflect off an object and enter the eye for the object to be seen. 4-PS4-3. Develop and compare multiple ways to transfer information through encoding, sending, receiving, and decoding a pattern.</p> |