



SCHOOL DISTRICT OF MONROE

Preparing for the Future, One Child at a Time

Science (Grade 4)

Course Description:

The curriculum for this required course is developed from the <http://www.nextgenscience.org/>.

Students will be exposed to and practice skills related to Science and Engineering practices, crosscutting concepts, and core ideas in science that all students in K-12 should master in order to prepare for success in college or 21st century careers. The standards are organized by the four disciplinary core ideas: Life Science, Physical Science, Earth and Space, and Engineering, Technology and the Application of Science. The information in this course overview outlines what students should understand and be able to do by the end of the year.

Mastery Standards:

Life Science

Students use science and engineering practices, crosscutting concepts, and an understanding of structures and processes (on a scale from molecules to organisms) to make sense of phenomena and solve problems. SCI.LS1

Physical Science

Students use science and engineering practices, crosscutting concepts, and an understanding of energy to make sense of phenomena and solve problems. SCI.PS3

Students use science and engineering practices, crosscutting concepts, and an understanding of waves and their applications in technologies for information transfer to make sense of phenomena and solve problems. SCI.PS4

Earth & Space

Students use science and engineering practices, crosscutting concepts, and an understanding of Earth's place in the universe to make sense of phenomena and solve problems. SCI.ESS1

Students use science and engineering practices, crosscutting concepts, and an understanding of Earth's systems to make sense of phenomena and solve problems. SCI.ESS2

Students use science and engineering practices, crosscutting concepts, and an understanding of the Earth and human activity to make sense of phenomena and solve problems. SCI.ESS3

Engineering, Technology and the Application of Science

Students use science and engineering practices, crosscutting concepts, and an understanding of engineering design to make sense of phenomena and solve problems. SCI.ETS1

Students use science and engineering practices, crosscutting concepts, and an understanding of the links among Engineering, Technology, Science, and Society to make sense of phenomena and solve problems. SCI.ETS2

Students use science and engineering practices, crosscutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems. SCI.ETS3

Unit	Description of Unit and Learning Targets
<p>Unit Title: Structure, Function, and Information Processing</p> <p>Mystery Science Unit: Human Machine</p>	<p>Students will.....</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> I can develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.

<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How do internal and external structures support the survival, growth, behavior, and reproduction of plants and animals? 	<ul style="list-style-type: none"> ○ Mystery 2 ○ Mystery 3 • I can construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction (Ex: thorns, stems, brain, skin). • I can use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways (Ex: how systems transfer info). ○ Mystery 1 ○ Mystery 4
<p>Unit Title: Energy</p> <p>Mystery Science Unit: Energizing Everything</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What is energy and how it it related to motion? • How is energy transferred? • How can energy be used to solve a problem? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can use evidence to construct an explanation relating the speed of an object to the energy of that object. <ul style="list-style-type: none"> ○ Mystery 1 ○ Mystery 2 • I can make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. <ul style="list-style-type: none"> ○ Mystery 6 ○ Mystery 7 ○ Mystery 8 • I can ask questions and predict outcomes about the changes in energy that occur when objects collide. <ul style="list-style-type: none"> ○ Mystery 3 ○ Mystery 4 ○ Mystery 5 • I can apply scientific ideas to design, test, and refine a device that converts energy from one form to another. <ul style="list-style-type: none"> ○ Mystery 1 ○ Mystery 2 ○ Mystery 3 • I can obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment. <ul style="list-style-type: none"> ○ Mystery 8
<p>Unit Title: Waves: Waves and Information</p> <p>Mystery Science Unit: Waves of Sound</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are waves and what are some things they can do? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move (Ex: diagrams, physical models). <ul style="list-style-type: none"> ○ Mystery 3 • I can generate and compare multiple solutions that use patterns to transfer information (Ex: sound waves, morse code). <ul style="list-style-type: none"> ○ Mystery 1 ○ Mystery 2
<p>Unit Title: Earth's Systems: Processes that Shape the Earth</p> <p>Mystery Science Unit: Birth of Rocks</p>	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can identify evidence from patterns in rock formations and

Essential Questions:

- How can water, ice, wind, and vegetation change the land?
- What patterns of Earth's features can be determined with the use of maps?

fossils in rock layers to support an explanation for changes in a landscape over time.

- **Mystery 1**
- **Mystery 2**
- I can make observations and / or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
 - **Mystery 3**
- I can analyze and interpret data from maps to describe patterns of Earth's features.
 - **Mystery 1**
- I can generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
 - **Mystery 4**