# Science (Grade 5)

## 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

Students use science and engineering practices, crosscutting concepts, and an understanding of the interactions, energy, and dynamics within ecosystems to make sense of phenomena and solve problems. SCI. LS2

Physical Science:
Students use science and engineering practices, crosscutting concepts, and an understanding of matter and interactions to make sense of phenomena and solve problems. SCI.PS1

Students use science and engineering practices, crosscutting concepts, and an understanding of forces, interactions, motion and stability to make sense of phenomena and solve problems. SCI.PS2

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

Earth & Space Science:
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 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 and 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 |
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| **Unit Title: Matter and Energy in Organisms and Ecosystems**<br>**(Mystery Science: Web of LIfe)**<br><br>Essential Questions:<br>● How does matter cycle through ecosystems?<br>● Where does the energy in food come from and what is it used for? | Students will...<br><br>Learning Targets:<br>● I can use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. (diagrams, flowcharts)<br>**MS3: Where do fallen leaves go?**<br>● I can support an argument that plants get the materials they need for growth chiefly from air and water.<br>**MS2: What do Plants Eat?**<br>● I can develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.<br>**MS1: Why Would a Hawk Move to NYC?**<br>**MS4: Do worms really eat dirt?**<br>**MS6: Why did the dinosaurs go extinct?**<br>**MS5: Why do you have to clean a fish tank but not a pond?** |
| **Unit Title: Structure and Properties of Matter**<br>**(Mystery Science: Chemical Magic)**<br><br>Essential Questions:<br>● When matter changes, does its weight change? | Students will...<br><br>Learning Targets:<br>● I can develop a model to describe that matter is made of particles too small to be seen.<br>**MS5: Why do some things explode?**<br>**MS2: Could you transform something worthless into gold?**<br>● 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.<br>● I can make observations and measurements to identify materials based on their properties.<br>● I can conduct an investigation to determine whether the mixing of two or more substances results in a new (CHANGE) substance.<br>**MS4: What do fireworks, rubber,and silly putty have in common?**<br>**MS5: Why do some things explode?**<br>**MS3: What would happen if you drank a glass of acid?**<br>**MS1: Are magic potions real?** |
| **Unit Title: Space and Systems: Stars and the Solar System**<br>**(Mystery Science: Spaceship Earth)**<br><br>Essential Questions:<br>● How do lengths and directions of shadows or relative lengths of day and night change from day to day, and how does the appearance of some stars change in different seasons? | Students will...<br><br>Learning Targets: Majority of learning targets do not go with MS<br>● I can support an argument that the gravitational force exerted by Earth on objects is directed down. (Ex: "Down" is a local description of the direction that points toward the center of the Earth).<br>● 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. (Ex: limited to relative distances, not sizes, of stars).<br>● I can represent data in the graphical displays to reveal |

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| | patterns of daily changes in length and **direction of shadows**, day and night, and the **seasonal appearance of some stars in the night** sky. (Ex: the positions and motion of Earth with respect to the sun and selected stars that are visible only particular months.<br>**MS2: How can the sun tell you the season?**<br>**MS3: Why do the stars change with the seasons?** |
| **Unit Title:Earth's Systems**<br>**(Mystery Science: Watery Planet)**<br><br><u>Essential Questions:</u><br>● How much water can be found in different places on Earth? | Students will...<br><br><u>Learning Targets:</u><br>● I can develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact (Ex: Oceans impacts ecosystems, landform shapes and climate).<br>**MS3: Can we make it rain?**<br>● I can describe and graph the amounts of saltwater and freshwater in various reservoirs to provide evidence about the distribution of water on Earth.<br>**MS1: How much water is in the world?**<br>● I can obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.<br>**MS2: When you turn on the faucet where does the water come from?**<br>**MS4: How can you save a town from a hurricane?** |