

Science: Grade Four

<p><b>Standard #1</b>  <b>Scientific Investigation</b>                  Students applied the process of scientific investigation and design, conducted, communicated about, and evaluated investigation.</p>
<p><b>Standard #2</b>  <b>Physical Science</b>                  Students understood common properties, forms and changes in matter and energy.</p>
<p><b>Standard #3</b>  <b>Life Science</b>                  Students understood the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.</p>
<p><b>Standard #4</b>  <b>Earth and Space Science</b>                  Students understood the processes and interactions of Earth's systems and the structure and dynamics of Earth and other space objects.</p>
<p><b>Standard #5</b>  <b>Scientific Method</b>                  Students understood that the nature of science involves a particular way of building knowledge and making meaning of the natural world.</p>

**Description**

Each student will have acquired essential science skills and knowledge including use of the scientific investigation process; understandings of concepts of life, earth, and physical sciences; understandings of the interrelationships among the sciences and the applications of science as technology; and knowledge of the impact of science in our world. Knowledge of astronomy, the forces that shape the earth, oceans, rock and minerals, the scientific method, electricity, and magnetism and the structures of life. The curriculum has been aligned to provide the content necessary for students to achieve the grade level expectations and, upon completion of their program of studies, the District's content standard.

**Time Allocation**  
 Thirty-five minutes daily for the entire year

**Texts/References**  
 Foss Kits: Earth Minerals, Electricity and Magnetism, Life Structures

**Themes /Topics**  
 Astronomy  
 Forces that shape the Earth  
 Oceans  
 Rocks and minerals  
 Scientific Method  
 Electricity and magnetism  
 Structures of life

**Assessments**  
 Teacher-made quizzes  
 Group activities  
 Teacher-made tests

**Grades and Achievement Levels**  
 Grades are based on activities, quizzes, and tests Each student also receives a rating that shows the student's achievement grade based upon the student's attainment of the grade level expectations as demonstrated on class assessments.

# Essential Learning: Science Grade Four

<p style="text-align: center;"><b>Standard # 1</b> <b>Scientific Investigation</b></p> <p>Students applied the process of scientific investigation and design, conducted, communicated about, and evaluated investigation.</p>	<p style="text-align: center;"><b>Standard # 2</b> <b>Physical Science</b></p> <p>Students understood common properties, forms and changes in matter and energy.</p>	<p style="text-align: center;"><b>Standard # 3</b> <b>Life Science</b></p> <p>Students understood the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.</p>	<p style="text-align: center;"><b>Standard # 4</b> <b>Earth and Space Science</b></p> <p>Students understood the processes and interactions of Earth's systems and the structure and dynamics of Earth and other space objects.</p>	<p style="text-align: center;"><b>Standard # 5</b> <b>Scientific Method</b></p> <p>Students understood that the nature of science involves a particular way of building knowledge and making meaning of the natural world.</p>
<ul style="list-style-type: none"> <li>• Scientific Investigation includes the design, conducting, communicating about, and evaluation of an investigation</li> <li>• Identification of use of appropriate tools to gather and display quantitative and qualitative data related to an investigation</li> </ul>	<ul style="list-style-type: none"> <li>• Objects have physical properties that can be measured</li> <li>• Measurable physical properties can be compared before and after affecting a change to verify that a change has occurred and to be used to predict the outcome in similar circumstances</li> <li>• There are different types and sources of energy</li> <li>• There are various types of source that have effects that can be seen</li> </ul>	<ul style="list-style-type: none"> <li>• Each plant or animal has different structures and behaviors that serve different functions in growth and survival</li> <li>• Green plants need energy from sunlight and various raw materials to live, while animals consume plants and other organisms to live</li> <li>• Human body systems have basic structure, functions and needs</li> <li>• There is interaction and interdependence between and among nonliving and living components of ecosystems</li> <li>• Life cycles vary from organism to organism</li> <li>• Fossils can be compared to one another and to living organisms according to their similarities and differences and show that life has changed over time</li> <li>• There are similarities and differences in appearance among individuals of the same population</li> <li>• There are similarities and differences between various organisms</li> </ul>	<ul style="list-style-type: none"> <li>• Natural processes change Earth's surface and impact its inhabitants</li> <li>• Fossils are evident of past life</li> <li>• Many of Earth's resources can be conserved, recycled and depleted</li> <li>• Most of Earth's surface is covered by water and locations of salt and fresh water</li> <li>• Water exists on Earth in different states and changes from one state to another</li> <li>• Objects seen in the day and night skies</li> <li>• Basic components of the Solar System</li> <li>• Earth's rotation on its axis, in relation to the Sun, produces the day-and-night cycle and seasons and that the orbit of the Earth around the Sun completes one year</li> <li>• Earth's rotation produces gravity</li> </ul>	<ul style="list-style-type: none"> <li>• Scientific experiments repeated with the same conditions generally work the same way</li> <li>• Models are used to represent events and objects and to understand scientific processes that may be difficult to study</li> </ul>

# Expectations: Science Grade Four

<b>Standard #1</b>	<b>Standard #2</b>	<b>Standard #3</b>	<b>Standard #4</b>	<b>Standard #5</b>
<ol style="list-style-type: none"> <li>1. Designed and conducted scientific lab investigations</li> <li>2. Identified the question or problem explored in an experiment</li> <li>3. Formulated a hypothesis</li> <li>4. Selected tools appropriate to an investigation</li> <li>5. Identified the data to collect to answer the question in an experiment</li> <li>6. Identified that changing a variable in a previously conducted experiment will give a new result</li> <li>7. Identified sources of error within an investigation</li> <li>8. Evaluated and communicated scientific results in text and graphics</li> </ol>	<ol style="list-style-type: none"> <li>1. Identified and classified properties of rocks and minerals</li> <li>2. Classified and compared objects with common physical properties (ex. state of matter, shape, size)</li> <li>3. Measured a physical property for length, mass, volume, temperature</li> <li>4. Compared quantities associated with energy, movement, and change through graphics</li> <li>5. Displayed knowledge of the principal of energy transfer through pictures, graphs, and text</li> <li>6. Predicted quantities that would not change in a scenario involving change due to an external influence</li> </ol>	<ol style="list-style-type: none"> <li>1. Listed the basic needs of all animals</li> <li>2. Classified organisms by physical characteristics.</li> <li>3. Listed the needs of ocean plants and animals</li> <li>4. Explained how crayfish anatomy helps the animal survive</li> <li>5. Constructed a food chain</li> <li>6. Explained how an animal uses other organisms in the environment</li> <li>7. Understood differences between predators and prey</li> <li>8. Described the stages of an insect's life</li> <li>9. Sequenced life cycle of a plant</li> <li>10. Explained why plants need light</li> <li>11. Drew and labeled parts of a plant</li> <li>12. Explained purpose of the parts of a plant and their modifications</li> <li>13. Described the components and interrelationship of an ecosystem</li> </ol>	<ol style="list-style-type: none"> <li>1. Listed and explained natural forces that shape the Earth and affect inhabitants</li> <li>2. Explained how movement of the Earth's plates cause earth quakes and volcanoes</li> <li>3. Explained differences between ocean waves and currents</li> <li>4. Explained differences between weathering and erosion</li> <li>5. Identified differences between rocks and minerals</li> <li>6. Classified rocks as sedimentary, igneous, metamorphic</li> <li>7. Listed resources that come from rocks, minerals, and soils</li> <li>8. Created a fossil replica</li> <li>9. Described the basic components of the solar system</li> <li>10. Listed objects visible to the unaided eye in the day and night skies</li> <li>11. Described the motion of Earth in relation to the sun (its apparent change in position) and how the relation causes concepts of day, night, year, and temperature on Earth</li> <li>12. Recognized that the moon's phases (shape changes over time) and why phases occur</li> <li>13. Explained the cause of the earth's seasons</li> </ol>	<ol style="list-style-type: none"> <li>1. Demonstrated understanding of nature of science</li> <li>2. Identified cause- effect relationships</li> <li>3. Identified observable patterns and predicted future events based on those patterns</li> <li>4. Compared a model with what it represents</li> </ol>