

**SCIENCE  
PRIORITY TOPICS**

<p><b>Grade 1</b> First Trimester – Earth Science (Weather)</p>	<p><b>Features of Weather</b>  <b>Temperature</b> – how hot or cold is it?  <b>Moisture</b> – how wet or dry is it?  <b>Wind</b> – how does the air move?  <b>Clouds</b> – why do clouds look different?  <b>Types of Weather</b>  <b>Rain</b> forms when droplets of water in the clouds that are heavy enough to fall out of the sky.  <b>Snow</b> forms if it is freezing in the clouds and the ice crystals don't have time to melt before they reach the Earth.  <b>Hail</b> happens when ice crystals are repeatedly pushed up into colder air before reaching the Earth.  <b>Measuring Weather</b>  <b>Temperature</b> – use a thermometer; record the temperature each day and graph it.  <b>Moisture</b> – create a rain gauge. Practice using a ruler to measure the rain or snow collected.  <b>Wind</b> – set up a wind sock or flag and describe how it is affected by the wind: its direction and speed.</p>
<p>Second Trimester – Physical Science (Matter)</p>	<p><b>Matter</b> is what makes up all things.  <b>Properties</b> can be observed using the senses (size, shape, color).  <b>Types of Matter</b> – solids, liquids, gases  <b>Changes of Matter</b>  <b>Floating or Sinking</b>  <b>Freezing or Melting</b></p>
<p>Third Trimester – Human Body</p>	<p><b>Senses</b> are the parts of the body that deliver information to the brain so that we can understand what is going on around us.  <b>Sight</b> – two-thirds of the brain's attention is taken up by what the eye sees.  <b>Sound</b> – vibrations or waves that travel through the air is heard by the ear.  <b>Smell and Taste</b> are connected. These senses detect odors and flavors, good and bad.  <b>Touch</b> is sensed through your skin and some of your muscles such as your tongue.</p>

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<p>Third Trimester – Life Science (Plants)</p>	<p><b>Plants</b> are living organisms that provide oxygen and take in the carbon dioxide that humans give off. What does a plant need to grow? Growth of plants is a cycle.</p> <p><b>Parts of Plants</b> – A seed is made up of stored food and a tiny plant. The tiny plant uses the stored food when it begins to grow.</p> <p><b>Roots</b> take in water and nutrients from the soil. <b>Stems</b> hold up the plant and move water and nutrients through it. <b>Leaves</b> use light, air, water, and nutrients to make food for the plant. <b>Flowers</b> make fruits that hold seeds.</p>
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**Grade 2**

<p>First Trimester Earth Science</p>	<p>Demonstrate the motions in the Solar System, rotation and revolution. Identify the characteristics of each planet. Observe the Moon, Earth's only satellite.</p>
<p>Second Trimester Physical Science</p>	<p>Demonstrate the energy of heat that can change a matter's state. Compare and contrast vibrations and the sounds each makes. Identify sources of light and how it travels.</p>
<p>Third Trimester Life Science</p>	<p>Categorize animals by classes. Compare and contrast cold and warm blooded. Explore the structure of animals and identify the two major divisions; vertebrates and invertebrates.</p>

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**Grade 3**

<p>First Trimester – Earth Science (Geology)</p>	<p><b>Rocks and Minerals</b> Students should classify rocks using a hand lens and by creating their own classification system (before the lesson). How do rocks form? Rocks are natural, solid, nonliving materials found in the earth - compare and contrast rocks by their characteristics. Rocks are made of one or more minerals. Rocks are always changing and undergoing various processes during the rock cycle. There are three types of rocks – you may explore specific examples of each type if you have the time and inclination.</p> <p>What are minerals? A mineral is a natural solid material that forms from nonliving things. Growing Crystals: students this age are fascinated by being able to grow crystals: get a kit or research on the internet some suggestions for easy, inexpensive crystal growing activities. Minerals can be identified by their physical properties. Many everyday items come from minerals. Chemicals found in some minerals keep our bodies healthy.</p> <p><b>Soil Formation</b> Soil is the thin layer of loose material that covers most of Earth’s land. Why is soil important? Soil forms over hundreds of years from nonliving and once living materials. Soil is involved in the water cycle. Soil is organized in layers. Different places have layers of different thickness and color. Types of Soil – Soil type depends in part on the types of rock particles found in the soil.</p> <p><b>Water Cycle</b> Why is water important? Make a collage that shows the various uses of water. Three-fourths of Earth’s surface is covered with water, most of which is salt water.</p>
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	Water moves in a cycle from Earth's surface to the air and back again.
Second Trimester – Physical Science (Forces and Motion)	<p><b>Motion</b> is a change in position. Types of Motion: linear, wave, and random</p> <p><b>Force</b> is a push or pull on an object; force happens in pairs (heavier objects need a greater force to make them move). Types of Force: gravity, friction, and magnetic force</p> <p><b>Work</b> happens when force changes the motion of an object; what happens when force moves mass over a distance.</p> <p><b>Energy</b> is the ability to do work.</p> <p><b>Simple Machines</b> – tools that make work easier; when using a simple machine less energy is required. Types of Simple Machines: lever, pulley, wheel-and-axle, inclined plane, screw, and wedge</p>
Third Trimester – Human Body	<p><b>Cell, Tissues, and Organs</b></p> <p><b>Cell</b> is the basic unit of all living things.</p> <p><b>Tissue</b> is made of similar cells that work together to perform a function.</p> <p><b>Organs</b> are made tissues that work together; organs perform major functions that keep the animal alive.</p> <p><b>System</b> is made of organs that work together to perform a function; human beings have ten major body systems; systems are dependent upon one another.</p> <p><b>Skeletal System</b> - bones and muscles work together to support and move the body; provides support for the body and protects the internal organs.</p> <p><b>Muscular System</b></p> <p>Types of Muscles: voluntary muscles, smooth muscles, and cardiac muscles</p>

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<p>Third Trimester – Life Science (Living Things)</p>	<p><b>Ecosystem</b> is a community and its physical environment together.</p> <p><b>Food Chains</b> Cells get energy they need from food. The sun provides the energy for almost every ecosystem on Earth.</p> <p><b>Food Webs</b> show the interaction among many different food chains in a single ecosystem.</p> <p><b>Food chain</b> is the way in which the organisms in an ecosystem interact with one another according to what they eat.</p> <p>Adaptation is a trait or traits that help an animal meet its needs in the place where it lives; adaptations are inherited, passed on to future generations.</p>
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**Grade 4**

First Trimester Earth Science	<p><b>Oceanography:</b> Identify the science which deals with the study of exploration of the ocean. Understand the composition of the ocean's water. Describe the features of the ocean floor.</p> <p><b>Atmosphere:</b> Measure the changes in the air temperature. Identify the causes of air pressure and how it is measured. Describe the causes of wind and how to measure its speed and direction.</p>
Second Trimester Physical Science	<p><b>Describe matter.</b> Identify the states of matter. Determine the physical and chemical properties of matter. Determine the physical and chemical changes of matter.</p>
Third Trimester Life Science	<p>Understand how the Digestive System works. Understand how the Circulatory System works. Understand how the Nervous System works.</p> <p>Explore the structure of plants and identify the role of each part. Know the life cycle of plants. Explore the structure of animals and identify the two major divisions; vertebrates and invertebrates.</p>

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**Grade 5**

<p>First Trimester – Earth Science (Astronomy)</p>	<p>Describe the relationship and interdependence of the Earth, the Sun, and the Moon.</p> <ul style="list-style-type: none"><li>Demonstrate the difference between rotation and Revolution; orbit the Earth around the Sun and tilt of the axis.</li><li>Relate the seasons to the rotation and tilt of the Earth’s axis.</li></ul> <p>Compare and contrast the composition of the Earth, the Sun, and the Moon.</p> <ul style="list-style-type: none"><li>Use pie graphs to discuss the composition of the Earth’s surface.</li><li>Diagram the structure of the Sun.</li><li>Research and debate the origins of the Moon.</li><li>Classify the planets through a research of characteristics such as size, composition, distance from the Sun, and other characteristics in which students are interested (use of technology).</li></ul> <p>Classify other bodies in space such as asteroids, meteors, and comets.</p> <p>Explore the universe based upon personal interests: formation of universe, evolution of stars and galaxies, the mythology associated with the naming of celestial bodies such as constellations.</p>
<p>Second Trimester – Physical Science (Energy)</p>	<p>Students will be able to classify the types of energy as potential and kinetic energy.</p> <p>Students will complete a websearch to determine the forms of energy and how they are used in everyday life.</p> <ul style="list-style-type: none"><li>Design an experiment that shows whether or not thermal energy increases the kinetic energy of a gas.</li></ul> <p>Create a demonstration of how electrical energy happens.</p> <ul style="list-style-type: none"><li>Design an experiment to test how long various brands of batteries work.</li><li>Investigate how electrical series and parallel circuits are different.</li></ul> <p>Examine and research how impressionist art was influenced by the discoveries about light.</p> <ul style="list-style-type: none"><li>Predict how a shadow changes as a person moves in relation to the Sun.</li></ul>

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<p>Third Trimester – Life Science (Human Body)</p>	<p>Understand how the respiratory system works. Create an interactive poster that permits the viewer to follow a molecule of air through the respiratory system. Investigate student lung capacity and graph the results. Present an oral report on one of the diseases of the respiratory system.</p> <p>Understand how the excretory system works. Compare and contrast a city waste treatment plant with the human excretory system.</p>
<p>Life Science (Ecology)</p>	<p>Define ecology as a branch of life science and describe what scientists study in this branch of life science. Respond to this prompt: How is a change in the ecosystem like a ripple after a stone is thrown into a pond? Design an investigation to demonstrate how camouflage protects a species. Create a habitat for an imaginary animal.</p> <p>Define and identify various biomes that can be found in the United States. Conduct an interview of a naturalist or ecologist. Write a poem describing the climate and organisms of a specific biome. Illustrate it.</p> <p>Investigate water samples from various water biomes using microscopes or hand lenses. Discover some of the factors affecting the health and growth of coral reefs around the world.</p> <p>Relate the food chain to the food web to the food pyramid. Create a visual representation of the differences.</p>

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**Grade 6**

Earth Science	<p>Know the layers and structure of the <b>Earth's interior</b>.</p> <p>Understand the theory of <b>Plate Tectonics</b> and be able to compare it to the earlier theory of Continental Drift.</p> <p>Understand and model the types of <b>plate boundaries</b>.</p> <p>Understand the dynamics of <b>Earthquakes</b>, and be able to classify the types of seismic waves. Know the fundamentals of Earthquake safety.</p> <p>Understand conditions that lead to the formation of a <b>Volcano</b>, and classify the volcanoes by type. Diagram and/or identify the major parts of a volcano.</p> <p>Understand and investigate the dynamics of <b>Weathering, Erosion, and Deposition</b>, including erosion and deposition by wind, water, and glaciers.</p>
Physical Science	<p>Understand and be able to demonstrate <b>Force</b>, including the forces of gravity and gravitation, and <b>Motion</b>, including the measurement of motion as speed, velocity, acceleration, and momentum.</p> <p>Gain a historical perspective on <b>Newton's Laws of Motion</b>. Know, understand, and demonstrate the three Laws of Motion. Be able to predict movement based on the Laws of Motion.</p> <p>Understand, predict and demonstrate the <b>Interaction of forces and motion</b>, including balanced and unbalanced forces, as well as, the impact of friction on the motion of</p>

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	objects.
Life Science	<p>Understand and explain <b>cell theory</b>.</p> <p>Understand basic <b>cell structure</b>. Be able to identify and diagram the basic cell structures and organelles of plant cells and animal cells.</p> <p>Explore the movement of substances in a cell by <b>diffusion</b> and <b>osmosis</b>.</p> <p>Understand the division of cells in single-celled and multicellular organisms.</p> <p><b>Human Body Systems</b></p> <p>Learn the functions and structures of the Nervous System</p> <p>Understand the factors that will help maintain a healthy nervous system.</p> <p>Learn the functions and structures of the Endocrine System</p> <p>Understand the need for Homeostasis - regulation of steady, life- maintaining Conditions, and the diseases and conditions that can result from a malfunction of the Endocrine System.</p>

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**Grade 7**

<b>Topic</b>	<b>Priority Topics</b>
Biology	<ul style="list-style-type: none"> <li>○ Know that reproduction is a characteristic of all living things as a function of a cell structure and the functions they perform</li> <li>○ Identify the cell as a common unit between living things; understand cell structure and the functions they perform</li> <li>○ Examine the foundations of genetics involving hereditary and inherited traits passed on through generations, understand the gene-chromosome concept, and apply classical genetic studies</li> <li>○ Know the characteristics, roles, and divisions of complex organisms such as plants and animals</li> <li>○ Understand that sexual reproduction involves the union of special sex cells that are usually produced by two separate parents with half of the genes coming from each parent allowing for a high degree of genetic diversity. Mostly plants and animals use sexual reproduction</li> <li>○ Identify and describe the levels of organization in living systems: tissues, organs, organ systems, and organisms</li> </ul>
Microbiology	<ul style="list-style-type: none"> <li>○ Know the characteristics and roles of simple organisms such as viruses, bacteria, fungi, algae, and protozoa</li> </ul>
Human Body Systems	<ul style="list-style-type: none"> <li>○ Identify and understand the structure and parts that comprise the systems and region of the human body</li> <li>○ Understand the nutrition- the need for food and a good diet; ingestion, digestion, egestion and related disorders</li> <li>○ Understand muscles and skeleton and how their interaction produces support and locomotion</li> <li>○ Know the chronology of embryological development from conception to birth in each trimester of pregnancy as well as the potential risks the developing embryo, and later the newborn infant may encounter</li> </ul>
Botany	<ul style="list-style-type: none"> <li>○ Know the structure and function of roots, stems, leaves, flowers and other parts of plants</li> </ul>
Ecology	<ul style="list-style-type: none"> <li>○ Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environment</li> </ul>

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**Grade 8**

<b>Topic</b>	<b>Priority Topics</b>
Geology	<ul style="list-style-type: none"><li>○ Identify the factors of weathering, weathering rates, soil formation and soil solution (the end product of weathering in the form of minerals in surface and ground water).</li><li>○ Understand earthquakes by examining the different types of seismic waves, wave velocities, how waves are transmitted through solid and/or fluid, and how to locate an epicenter by analyzing the travel times of seismic waves.</li><li>○ Identify evidence of erosion by examining displaced sediments and the properties of transported materials, as well as factors affecting transportation.</li><li>○ Understand how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature by introducing pollutants into the environment.</li><li>○ Understand the human impact on the environment through pollution and ways to improve it through education, research, laws and conservation.</li></ul>
Oceanography	<ul style="list-style-type: none"><li>○ Identify and comprehend the concepts involving the earth's water such as ground water, surface water and pollution.</li><li>○ Understand how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature by introducing pollutants into the environment.</li><li>○ Understand the human impact on the environment through pollution and ways to improve it through education, research, laws and conservation.</li></ul>

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Astronomy	<ul style="list-style-type: none"><li>○ Understand how and why the rotation of the earth around the sun affects the length of day and night, the changing of the seasons and weather patterns.</li><li>○ Understand how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature by introducing pollutants into the environment.</li><li>○ Understand the human impact on the environment through pollution and ways to improve it through education, research, laws and conservation.</li></ul>
Meteorology	<ul style="list-style-type: none"><li>○ Know the relationship between local atmospheric variables such as temperature, pressure, moisture and wind.</li><li>○ Understand that because of the tilt of earth's axis, sunlight and heat are more intense on one part of the earth during its one-year revolution around the sun; the change in the amount of heat produces the seasons.</li><li>○ Identify and comprehend factors that affect climate patterns such as latitude, elevation, large water bodies and ocean currents, mountain barriers, wind belts and storm tracks.</li><li>○ Know the processes involved in the water cycle and their effects on climate patterns.</li><li>○ Describe or measure positions on the earth's surface using coordinate systems and fields of isolines, isobars and iso-surfaces.</li><li>○ Understand how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature by introducing pollutants into the environment.</li><li>○ Understand the human impact on the environment through pollution and ways to improve it through education, research, laws and conservation.</li></ul>
Energy Resources	<ul style="list-style-type: none"><li>○ Know the properties of electromagnetic energy, solar energy and earth energy. Understand that weather and climate involve energy transfer in and out of the atmosphere by means of conduction, convection and radiation.</li></ul>