

# Georgia Standard of Excellence: Year Curriculum Map

## 6<sup>th</sup> Grade Science

<b>1<sup>st</sup> 9 week</b>		<b>2<sup>nd</sup> – 3<sup>rd</sup> 9 weeks</b>		<b>3<sup>rd</sup> – 4<sup>th</sup> 9 weeks</b>	
<b>20% covered on Ga Milestone</b>	<b>80% covered on Ga Milestone</b>				
<b>Unit: Universe and Solar System, Earth, Moon, and Sun</b>	<b>Unit: Water in Earth’s Processes</b>	<b>Unit: Weather and Climate</b>	<b>Unit: Inside the Earth</b>	<b>Unit: Rocks, Mineral, and Fossils</b>	<b>Unit: Weathering and Erosion</b>
<b>4 weeks</b>	<b>4 weeks</b>	<b>7 weeks</b>	<b>4 weeks</b>	<b>4 weeks</b>	<b>4 weeks</b>
<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>•Historical scientific Models</li> <li>•Solar System</li> <li>•Planets</li> <li>•Gravity</li> <li>•Comets, asteroids, and Meteors</li> </ul>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>•Earth’s water</li> <li>•Factors affecting water Cycle</li> <li>•Subsurface Topography</li> <li>•Currents, waves, and tide</li> </ul>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>•Tilt of the Earth</li> <li>•Effect of heat on weather patterns</li> <li>•Unequal heating of land and water</li> <li>•Wind and water energy</li> <li>•Ocean’s moisture and evaporation</li> </ul>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>•Earth’s crust, mantle, and core</li> <li>•Plate tectonic</li> </ul>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>•Rock compositions</li> <li>•Classification of rocks</li> <li>•Rock formation Processes</li> <li>•Fossil Evidence</li> <li>•Continental Drift</li> <li>•Renewable and nonrenewable resource</li> <li>•Conserving natural resource</li> </ul>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>•Weathering, erosion, and deposition</li> <li>•Soil</li> <li>•Effects of human activity on erosion</li> </ul>

## Unit: Rocks, Mineral, Fossils, & Resources (4 weeks)

**Overview:** The rock cycle, which is continual in nature, explains the formation of minerals and rocks. Fossils provide evidence of constant environmental changes.

**Unit EQ:** How do rocks, minerals, and fossils relate and show changes in Earth's surface?

<p>Georgia Standards of Excellence:</p>	<p><b>S6E5. Students will investigate the scientific view of how the earth's surface is formed.</b></p> <p>b. Investigate the contribution of minerals to rock composition.</p> <p>c. Classify rocks by their process of formation.</p> <p>g. Describe how fossils show evidence of the changing surface and climate of the Earth.</p> <p>i. Explain the effects of human activity on the erosion of the earth's surface.</p> <p>j. Describe methods for conserving natural resources such as water, soil, and air.</p>			
<b>Concept: 1</b>	<b>Concept: 2</b>	<b>Concept: 3</b>	<b>Concept: 4</b>	<b>Concept: 5</b>
<p><b>Rock compositions</b>  <i>– Minerals Characteristics</i>  <i>– Mineral Identification</i>  <i>– Mineral Uses</i></p>	<p><b>Classification of rocks</b>  <i>–Igneous</i>  <i>–Metamorphic</i>  <i>–Sedimentary</i></p>	<p><b>Rock formation Processes</b>  <i>–Rock Cycle</i></p>	<p><b>Continental Drift Fossil Evidence</b>  <i>–Fossils</i>  <i>–Plate Tectonics</i></p>	<p><b><i>Renewable and nonrenewable Resource</i></b>  <i>–Coal, oil, metals, natural gas, water, wind, solar radiation, trees</i>  <i>–Conserving Natural Resources</i></p>
<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• What are the characteristics of a mineral?</li> <li>• Why do we need to use more than one property to identify a mineral?</li> <li>• How are minerals used?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• How are rocks classified?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• How can rocks change from one type to another?</li> <li>• Is the rock cycle really a cycle? Explain your answer.</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• What do fossils show us about Earth's history?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>•How are renewable and nonrenewable resources different?</li> <li>•How are renewable and nonrenewable resources used?</li> <li>•How can humans help conserve natural resources?</li> </ul>

**Vocabulary:** Lithification, Rock cycle, Silicate, Crystalline ,Rock Composition, Sedimentary , Igneous, Metamorphic, Metamorphism, Pressure, Mineral Formation, Cementation, Compaction, Fossils , Element, Crystal, Lava, Magma, Ore, Sediment, Gem, Nonrenewable and Renewable resources, Methods of conservation

## Unit: Weathering and Erosion (4 weeks)

**Overview:** Earth processes that are observed today are similar to those that have occurred in the past.

**Unit EQ:** What are the characteristics of weathering, and how does weathering differ from erosion?

<p>Georgia Standards of Excellence:</p>	<p><b>S6E5. Students will investigate the scientific view of how the earth's surface is formed.</b></p> <p>d. Describe processes that change rocks and the surface of the earth.</p> <p>f. Explain the effects of physical processes (plate tectonics, erosion, deposition, volcanic eruption, gravity) on geological features including oceans (composition, currents, and tides).</p> <p>h. Describe soil as consisting of weathered rocks and decomposed organic material.</p> <p>i. Explain the effects of human activity on the erosion of the earth's surface.</p>	
<p><b>Concept: 1</b></p>	<p><b>Concept: 2</b></p>	<p><b>Concept: 3</b></p>
<p><b>Weathering</b>          – Biological          – Chemical          – Physical</p>	<p><b>Erosion</b>          –Water (on land and shoreline of ocean)          –Wind          –Gravity          –Ice/Glaciers</p>	<p><b>Soil</b>          –Soil horizons</p>
<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• What is meant by weathering? How many different kinds of weathering processes are there?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• How are weathering and erosion different?</li> <li>• How are weathering and erosion related?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• How does the formation of soil relate to the processes of weathering and erosion?</li> </ul>

**Vocabulary:** Organic matter, Horizons , Chemical weathering, Physical weathering, Biological Weathering, Composition of Soil, Erosion, Deposition, Frost wedging, Exfoliation, Thermal expansion, Dissolution, Oxidation, Humus, Soil, Abrasion

## Unit: Inside the Earth (4 weeks)

**Overview: Surface and subsurface processes that are involved in the formation and destruction of earth materials are identified in this unit.**

**Unit EQ: How are the features on earth created and destroyed?**

Georgia Standards of Excellence:

**S6E5. Students will investigate the scientific view of how the earth's surface is formed.**

- a. Compare and contrast the Earth's crust, mantle, and core including temperature, density, and composition.
  
- e. Recognize that lithospheric plates constantly move and cause major geological events on the earth's surface.
  
- f. Explain the effects of physical processes (plate tectonics, erosion, deposition, volcanic eruption, gravity) on geological features including oceans (composition, currents, and tides).

### Concept: 1

#### Earth's Layers

- Crust
- Mantle
- Inner Core
- Outer Core

### Concept: 2

#### Plate Tectonics

- Divergent Boundary
- Convergent Boundary
- Transform Boundary
- Continental Drift

#### EQ:

- How are the earth's layers alike and different?
- What challenges stand in the way of sending explorers to the center of the earth?

#### EQ:

- How does the movement of lithospheric plates cause major events on earth's surface?
- What evidence do scientists have that continents were once joined together?
- Why do mountains often occur in ranges thousands of kilometers long?
- What can fossils tell us about movements of the plates in the past?

**Vocabulary:** Volcanic activities, Plate boundaries, Fossil evidence, Rifting, Map of plate boundaries, Plate tectonics  
Magma, Continental drift, Oceanic Crust, Continental Crust, Convection current, Subduction Zone, Transform Boundaries, Divergent plate boundaries, Convergent plate boundaries, Earthquakes, Mantle, Inner Core, Outer Core, Lithosphere, Fold, Faults, Volcano, Geologic events

## Unit: Water in Earth Processes (3 weeks)

**Overview:** This unit addresses the movement of water through the crust, ocean, and atmosphere.

**Unit EQ:** How does the location of water on Earth’s surface and the conditions of the atmosphere affect waters path through stages of the water cycle?

Georgia Standards of Excellence:	<p><b>S6E3. Students will recognize the significant role of water in earth processes.</b></p> <p>a. Explain that a large portion of the Earth’s surface is water, consisting of oceans, rivers, lakes, underground water, and ice.</p> <p>b. Relate various atmospheric conditions to stages of the water cycle.</p> <p>c. Describe the composition, location, and subsurface topography of the world’s oceans.</p> <p>d. Explain the causes of waves, currents, and tides.</p> <p><b>S6E6. Students will describe various sources of energy and with their uses and conservation.</b></p> <p>a. Explain the role of the sun as the major source of energy and its relationship to wind and water energy.</p> <p>b. Identify renewable and nonrenewable resources.</p>		
<b>Concept: 1</b>	<b>Concept: 2</b>	<b>Concept: 3</b>	<b>Concept: 4</b>
<p><b>Water Cycle</b></p> <ul style="list-style-type: none"> <li>–Evaporation</li> <li>–Condensation</li> <li>–Precipitation</li> <li>–Runoff</li> </ul>	<p><b>Earth’s Water Distribution</b></p> <ul style="list-style-type: none"> <li>– Salt water</li> <li>–Fresh Water (solid and liquid)</li> </ul>	<p><b>Subsurface Topography</b></p> <ul style="list-style-type: none"> <li>–Continental Slope</li> <li>–Continental Shelf</li> <li>–Abyssal Plain</li> <li>–Seamounts</li> <li>–Mid-ocean ridge</li> </ul>	<p><b>Oceans</b></p> <ul style="list-style-type: none"> <li>–Waves</li> <li>–Currents</li> <li>–Tides</li> </ul>
<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• Why does water continually move through the water cycle?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• How does the amount of saltwater differ from the amount of freshwater on Earth?</li> <li>•Does salt water and fresh water move through the same water cycle?</li> <li>•Where does salt in the ocean come from?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• How are the geological features that exist on land similar to the geological features on the ocean floor?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• What causes waves?</li> <li>•How are ocean current created?</li> <li>•What causes tidal changes?</li> </ul>

**Vocabulary:** Earth processes, atmospheric conditions, stages, water cycle, composition, location, subsurface topography, waves, currents, and tides, energy, conservation, physical processes, erosion, deposition, gravity, geological features, natural resources, salt water, fresh water, salinity, H2O, evaporation, condensation, precipitation, geological features

# Unit: Climate and Weather (5 weeks)

**Overview:** This unit addresses the interaction of atmospheric conditions and the effects of these on weather and climate

**Unit EQ:** How does the sun interact with the earth to produce weather and climate?

<p>Georgia Standards of Excellence:</p>	<p><b>S6E2. Students will understand the effects of the relative positions of the earth, moon and sun.</b>  c. Relate the tilt of the earth to the distribution of sunlight throughout the year and its effect on climate.</p> <p><b>S6E4. Students will understand how the distribution of land and oceans affects climate and weather.</b>  a. Demonstrate that land and water absorb and lose heat at different rates and explain the resulting effects on weather patterns.   b. Relate unequal heating of land and water surfaces to form large global wind systems and weather events such as tornados and thunderstorms.   c. Relate how moisture evaporating from the oceans affects the weather patterns and weather events such as hurricanes.</p> <p><b>S6E6. Students will describe various sources of energy and with their uses and conservation.</b>  a. Explain the role of the sun as the major source of energy and its relationship to wind and water energy.</p>		
<p><b>Concept: 1</b></p>	<p><b>Concept: 2</b></p>	<p><b>Concept: 3</b></p>	<p><b>Concept: 4</b></p>
<p><b>Tilt of Earth</b>  – Seasons  – Rotation vs. Revolution</p>	<p><b>Weather Patterns</b>  – Atmosphere  – Coriolis Effect  – Large Convection Currents</p>	<p><b>Unequal Heating of Land and Water</b>  – Local winds  – Air movement/ Air Masses  – Small Convection Currents</p>	<p><b>Weather</b>  – Tornados  – Hurricanes</p>
<p><b>EQ:</b>  • How does the tilt of the earth affect the seasons and Earth’s climate?</p>	<p><b>EQ:</b>  • What is our atmosphere made of?  • How is weather affect by the Coriolis effect?</p>	<p><b>EQ:</b>  • How does an ocean affect the weather and climate of adjacent land?</p>	<p><b>EQ:</b>  • How does the sun’s energy cause winds and hurricanes?  • How does the sun’s heating of water in the tropics affect climate in the rest of the world?</p>

**Vocabulary:** Vocabulary, Climate, Weather, Earth’s Axis, Orbit, Rotation, Revolution, Air Masses, Weather Fronts, Tornados, Hurricanes, Coriolis Effect, High and low pressure,

## Unit: Universe and Solar System (4 weeks)

**Overview:** Most objects in the solar system are in regular and predictable motion. Those motions explain such phenomena as the day, the year, phases of the moon, and eclipses. The scientific view of the solar system is essential to students understanding the dynamics of processes that shape the Earth. This unit requires understanding of how scientific theories of the solar system and universe have changed.

**Unit EQ:** What are the current views of the universe and what is found in our solar system?

Georgia Standards of Excellence:	<p><b>S6E1. Students will explore current scientific views of the universe and how those views evolved.</b></p> <p>a. Relate the Nature of Science to the progression of basic historical scientific models (geocentric, heliocentric) as they describe our solar system, and the Big Bang as it describes the formation of the universe.</p> <p>b. Describe the position of the solar system in the Milky Way galaxy and the universe.</p> <p>c. Compare and contrast the planets in terms of</p> <ul style="list-style-type: none"> <li>•Size relative to the earth</li> <li>•Surface and atmospheric features</li> <li>•Relative distance from the sun</li> <li>•Ability to support life</li> </ul> <p>d. Explain the motion of objects in the day/night sky in terms of relative position.</p> <p>e. Explain that gravity is the force that governs the motion in the solar system.</p> <p>f. Describe the characteristics of comets, asteroids, and meteors.</p> <p><b>S6E2. Students will understand the effects of the relative positions of the earth, moon and sun.</b></p> <p>a. Demonstrate the phases of the moon by showing the alignment of the earth, moon, and sun.</p> <p>b. Explain the alignment of the earth, moon, and sun during solar and lunar eclipses.</p>
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Concept: 1	Concept: 2	Concept: 3	Concept: 4	Concept: 5
<p><b>Historical Scientific Models of the Solar System</b></p> <ul style="list-style-type: none"> <li>– Heliocentric</li> <li>– Geocentric</li> </ul>	<p><b>Solar System</b></p> <p>–Compare and contrast the planets in terms of</p> <ul style="list-style-type: none"> <li>•Size relative to the earth</li> <li>•Surface and atmospheric features</li> <li>•Relative distance from the sun</li> <li>•Ability to support life</li> </ul>	<p><b>Motion in Space</b></p> <ul style="list-style-type: none"> <li>–Gravity</li> <li>–Inertia</li> </ul>	<p><b>Other objects in space</b></p> <ul style="list-style-type: none"> <li>–Comets</li> <li>–Asteroids</li> <li>–Meteors</li> </ul>	<p><b>Eclipse</b></p> <ul style="list-style-type: none"> <li>–Solar</li> <li>–Lunar</li> </ul> <p><b>Motion of objects in day/night sky</b></p> <ul style="list-style-type: none"> <li>–Moon Phases</li> <li>–Sun</li> <li>–Stars</li> </ul>
<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>•How does the current model of the solar system differ from past models?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• How does the Earth differ from the other planets?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>• Why don't you float off in space when you are on the Earth?</li> <li>•Why do planets never leave the solar system or fall into the Sun?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>•How are asteroids, comets, and meteors different?</li> </ul>	<p><b>EQ:</b></p> <ul style="list-style-type: none"> <li>•How do lunar and solar eclipses differ? How are lunar and solar eclipses alike?</li> <li>•Why does the moon appear to change shapes?</li> </ul>

**Vocabulary:** Geocentric, Heliocentric, Big Bang Theory, Milky Way Galaxy, Universe, Inner planets , Outer planets, Comets, Asteroids, Meteors, Moon Phases, Solar Eclipse, Lunar Eclipse