

# Science, Grade 5

**Time on Task:** 4 hours per week

## Course Philosophy

Science reflects the magnificent order and complexity of God’s creation. It presents God as the great Designer, Sustainer, and Lawgiver. Students will continually be called on to see the divine wisdom of creation and its implications for other subjects. The student’s mind will be challenged to understand the universe and refute the man-made idea of evolution. Science is presented to show how man is created in God’s image in order to fulfill the Genesis command to subdue the earth and exercise the privilege to rule over it (Genesis 1:28a)

## Course Description

In Grade 5, the study of science includes planning and implementing field and laboratory investigations using scientific methods, analyzing information, making informed decisions, and using tools such as nets and cameras to collect and record information. Students also use computers and information technology tools to support scientific investigations.

<b>Goals and Objectives</b>	<b>Scope and Sequence</b>	<b>Spiritual Goals</b>
<p><b>Texas Essential Knowledge and Skills (TEKS)</b></p> <p><b>§112.7. Science, Grade 5.</b></p> <p><b>(a) Introduction.</b></p> <p>(1) In Grade 5, the study of science includes planning and implementing field and laboratory investigations using scientific methods, analyzing information, making informed decisions, and using tools such as nets and cameras to collect and record information. Students also use computers and information technology tools to support scientific investigations.</p> <p>(2) As students learn science skills, they identify structures and functions of Earth systems including the crust, mantle, and core and the effect of weathering on landforms. Students learn that growth, erosion, and dissolving are examples of how some past events have affected present events. Students learn about magnetism, physical states of matter, and conductivity as properties that are used to classify matter. In addition, students learn that light, heat, and electricity are all forms of energy.</p> <p>(3) Students learn that adaptations can improve the survival of members of a species, and they explore an organism's niche</p>	<ul style="list-style-type: none"><li>• Life Science: Cycles<ul style="list-style-type: none"><li>○ Natural Cycles</li><li>○ Life cycles</li><li>○ Cells</li><li>○ Ecological Succession</li></ul></li><li>• Physical Science: Transformations<ul style="list-style-type: none"><li>○ Measuring Matter</li><li>○ Changing Matter</li><li>○ Force and Work</li><li>○ Electricity and Magnetism</li></ul></li><li>• Predictability<ul style="list-style-type: none"><li>○ Earth’s Processes</li><li>○ Natural Resources</li><li>○ Weather and Climate</li><li>○ Sun, Earth, and Moon</li></ul></li><li>• Human Body: Balance<ul style="list-style-type: none"><li>○ Transitions</li><li>○ Disease</li></ul></li></ul>	<p><b>God’s intended purpose for science:</b></p> <ol style="list-style-type: none"><li>1. To learn that God looks at the intent of the heart rather than outward beauty. (I Samuel 16:7)</li><li>2. To learn that God’s glory is evident in all of nature. (Psalm 19:1)</li><li>3. To learn that God created the world. (Genesis 1:16)</li><li>4. To learn that all wisdom is found in God. (Proverbs 3:19)</li><li>5. To understand that our knowledge of the origin of life comes from God alone. God tells us that we can know of origins only by believing what He says. (Hebrews 11:3)</li><li>6. To know that no person was present or had any knowledge of His work at the beginning. (Job 38:4, 21)</li><li>7. To understand that all living things have their origin in God. (Genesis 1:11-13, 20-27, 31)</li></ol>

<p>within an ecosystem. Students continue the study of organisms by exploring a variety of traits that are inherited by offspring from their parents and study examples of learned characteristics.</p> <p>(4) Science is a way of learning about the natural world. Students should know how science has built a vast body of changing and increasing knowledge described by physical, mathematical, and conceptual models, and also should know that science may not answer all questions.</p> <p>(5) A system is a collection of cycles, structures, and processes that interact. Students should understand a whole in terms of its components and how these components relate to each other and to the whole. All systems have basic properties that can be described in terms of space, time, energy, and matter. Change and constancy occur in systems and can be observed and measured as patterns. These patterns help to predict what will happen next and can change over time.</p> <p>(6) Investigations are used to learn about the natural world. Students should understand that certain types of questions can be answered by investigations, and that methods, models, and conclusions built from these investigations change as new observations are made. Models of objects and events are tools for understanding the natural world and can show how systems work. They have limitations and based on new discoveries are constantly being modified to more closely reflect the natural world.</p> <p><b>(b) Knowledge and skills.</b></p> <p><b>(1) Scientific processes.</b> The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices. <i>The student is expected to:</i></p> <p>(A) demonstrate safe practices during field and laboratory investigations; and</p> <p>(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials.</p> <p><b>(2) Scientific processes.</b> The student uses scientific methods during field and laboratory investigations. <i>The student is expected to:</i></p>	<p style="text-align: center;"><b>Correlation with TEKS</b> <b>Level Five Science</b> Purposeful Design/ACSI Student Item code 7511 ISBN 978-1-58331-213-1 Teacher Item code 7512 ISBN 978-1-58331-212-4</p> <p>Lessons 1.1A, 1.1B, 1.1C, 1.1D and to end of book Lessons 1.1B, 1.3A, 1.3B</p>	<p>8. To understand that God cares about all living things. (Matthew 6:26, 28-30)</p> <p>9. To understand that God controls the ecological system. He can make things grow or not grow, be sturdy or diseased. (Psalm 65:9-13)</p> <p>10. To understand that God is the beginning of life on earth. Organisms were first created as mature, complete, and perfect. (Genesis 1:27, 28; 2:19, 20, 23, 24)</p> <p>11. To know that plants, animals, and man were each created with specific purposes. (Psalm 104:14, 15)</p> <p><b>Biblical Integration Truth Statements</b></p> <p><b>1. <i>What is prime reality, the really real?</i></b> God exists and is the ultimate reality. (Psalm 90:2, Revelation 22:13)</p> <p>a. God designed, created, and sustains His creation. (Genesis 1:1-31)</p> <p>b. God is good, holy, and loving. (Luke 18:19, 1 John 4:16, 1 Peter 1:16, Psalm 145:12)</p> <p>c. God is omniscient – all knowing. (Romans 11:33-36, Psalm 147:5)</p> <p>d. God is sovereign – nothing is beyond His ultimate interest, control, and authority. (Daniel 4:25)</p> <p>e. God is personal and also triune-He is coequally and coeternally God the Father, God the Son,</p>
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<p>(A) plan and implement descriptive and simple experimental investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology;</p> <p>(B) collect information by observing and measuring;</p> <p>(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence;</p> <p>(D) communicate valid conclusions; and</p> <p>(E) construct simple graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate information.</p> <p><b>(3) Scientific processes.</b> The student uses critical thinking and scientific problem solving to make informed decisions. <i>The student is expected to:</i></p> <p>(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;</p> <p>(B) draw inferences based on information related to promotional materials for products and services;</p> <p>(C) represent the natural world using models and identify their limitations;</p> <p>(D) evaluate the impact of research on scientific thought, society, and the environment; and</p> <p>(E) connect Grade 5 science concepts with the history of science and contributions of scientists.</p> <p><b>(4) Scientific processes.</b> The student knows how to use a variety of tools and methods to conduct science inquiry. <i>The student is expected to:</i></p> <p>(A) collect and analyze information using tools including calculators, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, compasses, balances, hot plates, meter sticks, timing devices, magnets, collecting nets, and safety goggles; and</p> <p>(B) demonstrate that repeated investigations may increase the</p>	<p>Lessons 1.6D, 1.7A, 2.3B, 2.4B, 2.5A and to end of book</p> <p>Lessons 1.6D, 1.7A, 2.3B, 2.4B, 2.5A and to end of book</p> <p>Lessons 1.6D, 1.7A, 2.3B, 2.4B, 2.5A and to end of book</p> <p>Lessons 6.6C, 6.6D, 7.6C, 7.8A</p> <p>Lessons 6.6C, 6.6D, 7.6C, 7.8A</p> <p>Teacher Prepared Unit on Scientific Method</p> <p>Lesson 5.6 (4<sup>th</sup> grade)</p> <p>Lessons 9.2, 9.3</p> <p>Lessons 3.1B, 3.3A, 3.3B</p> <p>Lessons 3.1B, 3.3A, 3.3B</p> <p>Used Throughout Text in Various Lab Activities</p> <p>Lessons 9.6A, 9.6B</p>	<p>Jesus, and God the Holy Spirit. (Hebrews 1:3)</p> <p><b>2. <i>What is the nature of external reality, that is, the world around us?</i></b></p> <p>a. God is the source of everything and created the universe out of nothing. (Genesis 1:1)</p> <p>b. The universe was created by God to be orderly. (Isaiah 45:18, Psalm 147:4)</p> <p>c. God is constantly involved in the unfolding pattern of the ongoing operation of the universe. (Psalm 24:1-2, Psalm 32:13-15)</p> <p>d. The universe reflects His glory. (Psalm 8:1, Psalm 19:1)</p> <p><b>3. <i>What is a human being?</i></b></p> <p>a. God created humans to know Him intimately and to have a loving relationship with Him. (Psalm 100:3)</p> <p>b. Human beings are created in the image of God with the capacity to choose. (Genesis 1:27, Proverbs 8:10)</p> <p>c. Adam and Eve chose disobedience and brought death to themselves and sin entered the world. (Romans 5:12)</p> <p>d. All human beings have a choice and all have chosen sin that brings separation from God. (Romans 3:23)</p> <p>e. Sin is rebellion against God's wishes and ways and this destroys our relationship with God. (Romans 8:7-8)</p>
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<p>reliability of results.</p> <p><b>(5) Science concepts.</b> The student knows that a system is a collection of cycles, structures, and processes that interact. <i>The student is expected to:</i></p> <p>(A) describe some cycles, structures, and processes that are found in a simple system; and</p> <p>(B) describe some interactions that occur in a simple system.</p> <p><b>(6) Science concepts.</b> The student knows that some change occurs in cycles. <i>The student is expected to:</i></p> <p>(A) identify events and describe changes that occur on a regular basis such as in daily, weekly, lunar, and seasonal cycles;</p> <p>(B) identify the significance of the water, carbon, and nitrogen cycles; and</p> <p>(C) describe and compare life cycles of plants and animals.</p> <p><b>(7) Science concepts.</b> The student knows that matter has physical properties. <i>The student is expected to:</i></p> <p>(A) classify matter based on its physical properties including magnetism, physical state, and the ability to conduct or insulate heat, electricity, and sound;</p> <p>(B) demonstrate that some mixtures maintain the physical properties of their ingredients;</p> <p>(C) identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving sugar in water; and</p> <p>(D) observe and measure characteristic properties of substances that remain constant such as boiling points and melting points.</p> <p><b>(8) Science concepts.</b> The student knows that energy occurs in many forms. <i>The student is expected to:</i></p> <p>(A) differentiate among forms of energy including light, heat, electrical, and solar energy;</p> <p>(B) identify and demonstrate everyday examples of how light is reflected, such as from tinted windows, and refracted, such as in cameras, telescopes, and eyeglasses;</p>	<p>Lesson 7.4</p> <p>Lesson 7.4</p> <p>Lesson 12.3</p> <p>Lessons 1.4, 1.5</p> <p>Lessons 2.1, 2.4, 2.5, 2.6</p> <p>Lessons 6.2, 6.3</p> <p>Lesson 6.3</p> <p>Lesson 6.3</p> <p>Lesson 6.2</p> <p>Lessons 10.3, 10.7</p> <p>Lessons 6.5, 12.2 (4<sup>th</sup> Grade)</p>	<p>f. God provides a way back to Himself through the death of His son Jesus (the second person of the Trinity), on the cross. (John 3:16, Romans 6:23)</p> <p>g. Human beings must respond to God with repentance of our sins, receiving forgiveness, and accepting Jesus as our Savior. (Romans 10:9-10)</p> <p><b>4. What happens to a person at death?</b></p> <p>a. For each person death is either the gate to life with God and His people or the gate to eternal separation from God. (1 Corinthians 50:52)</p> <p>b. After death, your soul will continue to exist in an eternal way and there is a final judgment by God. (Revelation 20:12)</p> <p>c. Everyone chooses to honor and love Him by accepting Jesus as our Lord and Savior or makes a choice to reject Jesus and grasp for self-fulfillment and personal glory. (Romans 6:23)</p> <p>d. Those who received Jesus as Savior will spend eternity in Heaven with God. (Philippians 4:10-21)</p> <p>e. Those who rejected Jesus as Savior will spend eternity in Hell without God. (Hebrews 10:26-27)</p> <p><b>5. Why is it possible to know anything at all?</b></p> <p>a. Human beings can both know the world around them and God</p>
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<p>(C) demonstrate that electricity can flow in a circuit and can produce heat, light, sound, and magnetic effects; and  (D) verify that vibrating an object can produce sound.</p> <p><b>(9) Science concepts.</b> The student knows that adaptations may increase the survival of members of a species.  <i>The student is expected to:</i></p> <p>(A) compare the adaptive characteristics of species that improve their ability to survive and reproduce in an ecosystem;  (B) analyze and describe adaptive characteristics that result in an organism's unique niche in an ecosystem; and  (C) predict some adaptive characteristics required for survival and reproduction by an organism in an ecosystem.</p> <p><b>(10) Science concepts.</b> The student knows that likenesses between offspring and parents can be inherited or learned.  <i>The student is expected to:</i></p> <p>(A) identify traits that are inherited from parent to offspring in plants and animals; and  (B) give examples of learned characteristics that result from the influence of the environment.</p> <p><b>(11) Science concepts.</b> The student knows that certain past events affect present and future events.  <i>The student is expected to:</i></p> <p>(A) identify and observe actions that require time for changes to be measurable, including growth, erosion, dissolving, weathering, and flow;  (B) draw conclusions about "what happened before" using data such as from tree-growth rings and sedimentary rock sequences; and  (C) identify past events that led to the formation of the Earth's renewable, non-renewable, and inexhaustible resources.</p> <p><b>(12) Science concepts.</b> The student knows that the natural world includes earth materials and objects in the sky.  <i>The student is expected to:</i></p> <p>(A) interpret how land forms are the result of a combination of constructive and destructive forces such as deposition of sediment and weathering;  (B) describe processes responsible for the formation of coal,</p>	<p>Lessons 8.3, 8.4, 8.5  Lesson 6.3 (4<sup>th</sup> Grade)</p> <p>Lesson 4.3</p> <p>Lessons 4.3A, 4.3B, 4.4A</p> <p>Lesson 4B</p> <p>Lesson 3.3</p> <p>Same</p> <p>Lessons 2.1-2.7</p> <p>Lessons 2.4, 9.2, 10.3</p> <p>Lesson 10.2</p> <p>Lessons 9.2, 9.3</p> <p>Lessons 10.2, 10.3</p>	<p>Himself because God has built within them the capacity to do so and because He takes an active role in communicating with them. (John 16:13)</p> <p>b. God's own intelligence is the basis of human intelligence. Knowledge is possible because there is something to be known (God and His creation) and someone to know (God and human beings made in His image). (Genesis 1:27)</p> <p>c. God reveals, Himself to us in two basic ways: by general revelation and by special revelation. (Exodus 3:2, Psalm 19:1-4)</p> <p>d. In general revelation, God speaks through the creation of the universe and through His word, the Bible. (2 Samuel 22:31, Psalm 19:1)</p> <ul style="list-style-type: none"> <li>➤ The Bible is internally consistent and unified in its principles and claims.</li> <li>➤ There is tremendous coherence across the many authors and centuries during which the various books were written and in which its stories unfold.</li> <li>➤ It is relevant to all the cultures of the world</li> </ul> <p>e. Special revelation is God revealing Himself through supernatural ways. Jesus Christ is the ultimate</p>
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<p>oil, gas, and minerals;</p> <p>(C) identify the physical characteristics of the Earth and compare them to the physical characteristics of the moon; and</p> <p>(D) identify gravity as the force that keeps planets in orbit around the Sun and the moon in orbit around the Earth.</p>	<p>Lessons 12.1, 12.2, 12.4</p> <p>Lessons 5.4, 5.7, 7.2, 12.2, 12.5</p> <p><b>Student Activities</b>  Role Play  Games/Puzzles  Stories  Songs  Projects  Cooperative Learning  Journaling  Graphic Organizers  Small Groups  Drawing  Manipulatives  Writer’s Workshop  Portfolio</p> <p><b>Teaching Strategies</b>  Direct Instruction  Open-ended Questions  Discussion  Demonstration  Brainstorming  Problem Solving  Read Aloud  Facilitating  Cooperative Learning</p> <p><b>Evaluation Procedures</b>  Observation  Class Participation  Quizzes/Tests</p>	<p>special revelation. He showed us what God is like more fully than any other form of revelation can. Because Jesus was also completely human, he spoke more clearly to us than any other form of revelation can. (John 14:7)</p> <p>6. <b><i>How do we know what is right and wrong?</i></b></p> <p>a. Ethics or the knowledge of right and wrong is based on the character of God as good (holy and loving). (Psalm 33:4)</p> <p>b. There is an absolute standard by which all moral judgments are measured and God Himself – His character of goodness (holiness and love) – is the standard. (1 Samuel 2:3)</p> <p>c. As a result of sin, morally, we have become less able to discern good and evil and less able to know God as He truly is. (Proverbs 1:7)</p> <p>d. God has revealed His standard in the various laws and principles expressed in the Bible. (Psalm 111:10)</p> <ul style="list-style-type: none"> <li>➤ He has dictated absolute moral truth to us.</li> <li>➤ Every truth must conform to Biblical principles.</li> <li>➤ Every choice must reflect God’s moral truth.</li> <li>➤ We must promote, defend, and teach these truths to others.</li> </ul>
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