

Science, Grade 4

Time on Task: 3½ - 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 4, 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 compasses to collect information. Students also use computers and information technology tools to support scientific investigations.

<p>Goals and Objectives Texas Essential Knowledge and Skills (TEKS)</p> <p>§112.6. Science, Grade 4. (a) Introduction.</p> <p>(1) In Grade 4, 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 compasses to collect information. Students also use computers and information technology tools to support scientific investigations.</p> <p>(2) As students learn science skills, they identify components and processes of the natural world including properties of soil, effects of the oceans on land, and the role of the Sun as our major source of energy. In addition, students identify the physical properties of matter and observe the addition or reduction of heat as an example of what can cause changes in states of matter.</p> <p>(3) Students learn the roles of living and nonliving components of simple systems and investigate differences between learned characteristics and inherited traits. They learn that adaptations of organisms that lived in the past may have increased some</p>	<p>Scope and Sequence</p> <ul style="list-style-type: none">• Life Science: Stability<ul style="list-style-type: none">○ Design of Life○ Order of Life○ Diversity of Life○ System of Life• Physical Science: Energy<ul style="list-style-type: none">○ Energy and Heat○ Light and Sound○ Motion and Force○ Matter and Its Uses• Earth and Space Science: Balance<ul style="list-style-type: none">○ The Lithosphere○ The Hydrosphere○ The Atmosphere○ The Universe• Human Body: Wellness<ul style="list-style-type: none">○ Body Systems I○ Body systems II	<p>Spiritual Goals God’s intended purpose for science:</p> <ol style="list-style-type: none">1. To learn that God looks at the intent of the heart rather than outward beauty. (I Samuel 16:7)2. To learn that God’s glory is evident in all of nature. (Psalm 19:1)3. To learn that God created the world. (Genesis 1:16)4. To learn that all wisdom is found in God. (Proverbs 3:19)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)6. To know that no person was present or had any knowledge of His work at the beginning. (Job 38:4, 21)7. To understand that all living things have their origin in God. (Genesis 1:11-13, 20-27, 31)
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<p>species' ability to survive.</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) Knowledge and skills.</p> <p>(1) Scientific processes. 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>(2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations. <i>The student is expected to:</i></p> <p>(A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and</p>	<p>Correlation with TEKS <u>Level Four Science</u> Purposeful Design/ACSI Student Item code 7509 ISBN 978-1-58331-209-4 Teacher Item code 7510 ISBN 978-1-58331-210-0</p> <p>Teacher Integrated Lesson 2 to end of book Chapter 9.7</p> <p>Chapter 1.6</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>Biblical Integration Truth Statements</p> <p>1. <i>What is prime reality, the really real?</i> 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>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 to organize, examine, and evaluate information.</p> <p>(3) Scientific processes. 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 4 science concepts with the history of science and contributions of scientists.</p> <p>(4) Scientific processes. 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, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses; and</p> <p>(B) demonstrate that repeated investigations may increase the reliability of results.</p> <p>(5) Science concepts. The student knows that complex systems may not work if some parts are removed. <i>The student is expected to:</i></p> <p>(A) identify and describe the roles of some organisms in living systems such as plants in a schoolyard, and parts in nonliving systems such as a light bulb in a circuit; and</p> <p>(B) predict and draw conclusions about what happens when</p>	<p>Chapter 1.2 Chapter 1.6</p> <p>Chapter 1.7 Chapter 1.6</p> <p>Teacher Integrated</p> <p>Chapter 5.6</p> <p>Chapter 9.2</p> <p>Chapter 7.4</p> <p>Chapter 7.4</p> <p>Chapters 5.1, 11.6</p> <p>Chapter 7.7</p> <p>Chapter 2.5</p> <p>Chapter 2.5</p>	<p>Jesus, and God the Holy Spirit. (Hebrews 1:3)</p> <p>2. <i>What is the nature of external reality, that is, the world around us?</i></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>3. <i>What is a human being?</i></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>part of a system is removed.</p> <p>(6) Science concepts. The student knows that change can create recognizable patterns. <i>The student is expected to:</i></p> <p>(A) identify patterns of change such as in weather, metamorphosis, and objects in the sky;</p> <p>(B) illustrate that certain characteristics of an object can remain constant even when the object is rotated like a spinning top, translated like a skater moving in a straight line, or reflected on a smooth surface; and</p> <p>(C) use reflections to verify that a natural object has symmetry.</p> <p>(7) Science concepts. The student knows that matter has physical properties. <i>The student is expected to:</i></p> <p>(A) observe and record changes in the states of matter caused by the addition or reduction of heat; and</p> <p>(B) conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy.</p> <p>(8) Science concepts. The student knows that adaptations may increase the survival of members of a species. <i>The student is expected to:</i></p> <p>(A) identify characteristics that allow members within a species to survive and reproduce;</p> <p>(B) compare adaptive characteristics of various species; and</p> <p>(C) identify the kinds of species that lived in the past and compare them to existing species.</p> <p>(9) Science concepts. The student knows that many likenesses between offspring and parents are inherited or learned. <i>The student is expected to:</i></p> <p>(A) distinguish between inherited traits and learned characteristics; and</p> <p>(B) identify and provide examples of inherited traits and learned characteristics.</p> <p>(10) Science concepts. The student knows that certain past events affect present and future events. <i>The student is expected to:</i></p>	<p>Chapter 11.7</p> <p>Chapter 7.1</p> <p>Chapter 2.2</p> <p>Chapter 10.2</p> <p>Chapter 10.6</p> <p>Chapter 3.5</p> <p>Chapter 3.6</p> <p>Chapter 3.7</p> <p>Chapter 2.4</p> <p>Chapter 2.4</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>4. What happens to a person at death?</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>5. Why is it possible to know anything at all?</p> <p>a. Human beings can both know the world around them and God</p>
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<p>(A) identify and observe effects of events that require time for changes to be noticeable including growth, erosion, dissolving, weathering, and flow; and</p> <p>(B) draw conclusions about "what happened before" using fossils or charts and tables.</p> <p>(11) Science concepts. The student knows that the natural world includes earth materials and objects in the sky.</p> <p><i>The student is expected to:</i></p> <p>(A) test properties of soils including texture, capacity to retain water, and ability to support life;</p> <p>(B) summarize the effects of the oceans on land; and</p> <p>(C) identify the Sun as the major source of energy for the Earth and understand its role in the growth of plants, in the creation of winds, and in the water cycle.</p>	<p>Chapter 9.4</p> <p>Chapter 3.7</p> <p>Chapter 9.5</p> <p>Chapter 10.5</p> <p>Chapter 10.3</p> <p>Student Activities Role Play Games/Puzzles Stories Songs Projects Cooperative Learning Journaling Graphic Organizers Small Groups Drawing Manipulatives Writer’s Workshop Portfolio</p> <p>Teaching Strategies Direct Instruction Open-ended Questions Discussion Demonstration Brainstorming Problem Solving</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"> ➤ The Bible is internally consistent and unified in its principles and claims. ➤ There is tremendous coherence across the many authors and centuries during which the various books were written and in which its stories unfold. ➤ It is relevant to all the cultures of the world <p>e. Special revelation is God revealing Himself through supernatural ways. Jesus Christ is the ultimate</p>
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	<p>Read Aloud Facilitating Cooperative Learning</p> <p>Evaluation Procedures Observation Class Participation Quizzes/Tests Projects Reports Survey (oral/written) Portfolio</p> <p>Other Resources and Bibliography Science Kit</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. <i>How do we know what is right and wrong?</i></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"> ➤ He has dictated absolute moral truth to us. ➤ Every truth must conform to Biblical principles. ➤ Every choice must reflect God’s moral truth. ➤ We must promote, defend, and teach these truths to others.
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