

Science, Grade 7

Time on Task: 3.5 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 7, the study of science includes conducting field and laboratory investigations using scientific methods, critical-thinking, problem-solving, and using tools such as weather instruments and calculators to collect and analyze information to explain a phenomenon. Students also use computers and information technology tools to support scientific investigations.

Goals and Objectives	Scope and Sequence	Spiritual Goals
<p>Texas Essential Knowledge and Skills (TEKS)</p> <p>§112.23. Science, Grade 7.</p> <p>(a) Introduction.</p> <p>(1) In Grade 7, the study of science includes conducting field and laboratory investigations using scientific methods, critical-thinking, problem-solving, and using tools such as weather instruments and calculators to collect and analyze information to explain a phenomenon. Students also use computers and information technology tools to support scientific investigations.</p> <p>(2) As students learn science skills, they identify gravity and phases of the moon as components of the solar system and explore the effects of events such as hurricanes on the Earth. Students use pulleys and levers to understand the relationship between force and motion. Students then relate the pulleys and levers to understand the relationship between force and motion. Students then relate the concept to processes in the human organism such as the movement of blood. In addition, students study chemical and physical properties of substances by examining the tarnishing of metal or burning of wood as examples of chemical</p>	<ul style="list-style-type: none">• Invitation to Science• Plants: Provision for Life• Your Wonderful Body• Introduction to Physical Science• The Amazing Atmosphere• Knowing the Weather• The Science of Classification• Through the Microscope• Science and Creation• Insects and Other Arthropods	<p>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)

<p>processes, and by identifying physical properties used to place elements on the periodic table.</p> <p>(3) Students learn about kinetic and potential energy and identify photosynthesis as an example of the transformation of radiant energy from the Sun into chemical energy for use by plants. Students investigate systems in humans to identify their structures and functions. Student compare asexual and sexual reproduction to illustrate that genetic materials are responsible for both dominant and recessive traits in organisms.</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 using safe, environmentally appropriate, and ethical practices.</p> <p><i>The student is expected to:</i></p> <p>(A) demonstrate safe practices during field and laboratory investigations; and</p>	<p style="text-align: center;">Correlation with TEKS Science Order and Reality A Beka Book Student Code No. 25909 Teacher Code No. 25917</p> <p style="text-align: center;">Chapter 1</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></p> <p>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>(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials.</p>	Chapter 1	<p>Jesus, and God the Holy Spirit. (Hebrews 1:3)</p>
<p>(2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations.</p>		<p>2. <i>What is the nature of external reality, that is, the world around us?</i></p>
<p><i>The student is expected to:</i></p>		
<p>(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology;</p>	Chapter 1	<p>a. God is the source of everything and created the universe out of nothing. (Genesis 1:1)</p>
<p>(B) collect data by observing and measuring;</p>	Chapter 1	<p>b. The universe was created by God to be orderly. (Isaiah 45:18,</p>
<p>(C) organize, analyze, make inferences, and predict trends from direct and indirect evidence;</p>	Chapter 1	<p>Psalm 147:4)</p>
<p>(D) communicate valid conclusions; and</p>	Chapter 1	<p>c. God is constantly involved in the unfolding pattern of the ongoing operation of the universe.</p>
<p>(E) construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data.</p>	Chapter 1	<p>(Psalm 24:1-2, Psalm 32:13-15)</p>
<p>(3) Scientific processes. The student uses critical thinking and scientific problem solving to make informed decisions.</p>		<p>d. The universe reflects His glory. (Psalm 8:1, Psalm 19:1)</p>
<p><i>The student is expected to:</i></p>		<p>3. <i>What is a human being?</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>	Chapter 1	<p>a. God created humans to know Him intimately and to have a loving relationship with Him. (Psalm 100:3)</p>
<p>(B) draw inferences based on data related to promotional materials for products and services;</p>	Chapter 1	<p>b. Human beings are created in the image of God with the capacity to choose. (Genesis 1:27,</p>
<p>(C) represent the natural world using models and identify their limitations;</p>	Chapter 1	<p>Proverbs 8:10)</p>
<p>(D) evaluate the impact of research on scientific thought, society, and the environment; and</p>	Chapter 1	<p>c. Adam and Eve chose disobedience and brought death to themselves and sin entered the world. (Romans 5:12)</p>
<p>(E) connect Grade 7 science concepts with the history of science and contributions of scientists.</p>	Chapter 1	<p>d. All human beings have a choice and all have chosen sin that brings separation from God. (Romans 3:23)</p>
<p>(4) Scientific processes. The student knows how to use tools and methods to conduct science inquiry.</p>		<p>e. Sin is rebellion against God's wishes and ways and this destroys our relationship with God. (Romans 8:7-8)</p>
<p><i>The student is expected to:</i></p>		
<p>(A) collect, analyze, and record information to explain a phenomenon using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers,</p>	Chapter 4	

<p>computer probes, timing devices, magnets, and compasses; and</p> <p>(B) collect and analyze information to recognize patterns such as rates of change.</p> <p>(5) Science concepts. The student knows that an equilibrium of a system may change. <i>The student is expected to:</i></p> <p>(A) describe how systems may reach an equilibrium such as when a volcano erupts; and</p> <p>(B) observe and describe the role of ecological succession in maintaining an equilibrium in an ecosystem.</p> <p>(6) Science concepts. The student knows that there is a relationship between force and motion. <i>The student is expected to:</i></p> <p>(A) demonstrate basic relationships between force and motion using simple machines including pulleys and levers;</p> <p>(B) demonstrate that an object will remain at rest or move at a constant speed and in a straight line if it is not being subjected to an unbalanced force; and</p> <p>(C) relate forces to basic processes in living organisms including the flow of blood and the emergence of seedlings.</p> <p>(7) Science concepts. The student knows that substances have physical and chemical properties. <i>The student is expected to:</i></p> <p>(A) identify and demonstrate everyday examples of chemical phenomena such as rusting and tarnishing of metals and burning of wood;</p> <p>(B) describe physical properties of elements and identify how they are used to position an element on the periodic table; and</p> <p>(C) recognize that compounds are composed of elements.</p> <p>(8) Science concepts. The student knows that complex interactions occur between matter and energy. <i>The student is expected to:</i></p> <p>(A) illustrate examples of potential and kinetic energy in everyday life such as objects at rest, movement of geologic faults, and falling water; and</p>	<p>Chapter 4</p> <p>Teacher-made Unit</p> <p>Teacher-made Unit</p> <p>Chapter 4</p> <p>Chapter 3</p> <p>Chapter 6</p> <p>Chapter 4</p> <p>Chapter 4</p> <p>Chapter 4</p> <p>Chapter 5</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 5:52)</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>(B) identify that radiant energy from the Sun is transferred into chemical energy through the process of photosynthesis.</p> <p>(9) Science concepts. The student knows the relationship between structure and function in living systems. <i>The student is expected to:</i></p> <p>(A) identify the systems of the human organism and describe their functions; and</p> <p>(B) describe how organisms maintain stable internal conditions while living in changing external environments.</p> <p>(10) Science concepts. The student knows that species can change through generations and that the instructions for traits are contained in the genetic material of the organisms. <i>The student is expected to:</i></p> <p>(A) identify that sexual reproduction results in more diverse offspring and asexual reproduction results in more uniform offspring;</p> <p>(B) compare traits of organisms of different species that enhance their survival and reproduction; and</p> <p>(C) distinguish between dominant and recessive traits and recognize that inherited traits of an individual are contained in genetic material.</p> <p>(11) Science concepts. The student knows that the responses of organisms are caused by internal or external stimuli. <i>The student is expected to:</i></p> <p>(A) analyze changes in organisms such as a fever or vomiting that may result from internal stimuli; and</p> <p>(B) identify responses in organisms to external stimuli found in the environment such as the presence or absence of light.</p> <p>(12) Science concepts. The student knows that there is a relationship between organisms and the environment. <i>The student is expected to:</i></p> <p>(A) identify components of an ecosystem;</p> <p>(B) observe and describe how organisms including producers, consumers, and decomposers live together in an environment and use existing resources;</p>	<p>Chapter 2</p> <p>Chapter 3</p> <p>Chapter 3</p> <p>Chapters 3, 7</p> <p>Chapters 3, 7</p> <p>Chapters 3, 7</p> <p>Chapter 3</p> <p>Chapter 3</p> <p>Teacher-made Unit Teacher-made Unit</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>(C) describe how different environments support different varieties of organisms; and</p> <p>(D) observe and describe the role of ecological succession in ecosystems.</p> <p>(13) Science concepts. The student knows components of our solar system. <i>The student is expected to:</i></p> <p>(A) identify and illustrate how the tilt of the Earth on its axis as it rotates and revolves around the Sun causes changes in seasons and the length of a day; and</p> <p>(B) relate the Earth's movement and the moon's orbit to the observed cyclical phases of the moon.</p> <p>(14) Science concepts. The student knows that natural events and human activity can alter Earth systems. <i>The student is expected to:</i></p> <p>(A) describe and predict the impact of different catastrophic events on the Earth;</p> <p>(B) analyze effects of regional erosional deposition and weathering; and</p> <p>(C) make inferences and draw conclusions about effects of human activity on Earth's renewable, non-renewable, and inexhaustible resources.</p>	<p>Teacher-made Unit</p> <p>Teacher-made Unit</p> <p>Chapter 1</p> <p>Chapter 1</p> <p>Chapter 5</p> <p>Chapter 5</p> <p>Chapter 5</p> <p>Student Activities</p> <p>Role Play</p> <p>Games/Puzzles</p> <p>Stories</p> <p>Songs</p> <p>Projects</p> <p>Cooperative Learning</p> <p>Journaling</p> <p>Graphic Organizers</p> <p>Small Groups</p> <p>Drawing</p> <p>Manipulatives</p> <p>Writer's Workshop</p> <p>Portfolio</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. How do we know what is right and wrong?</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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	<p>Teaching Strategies Direct Instruction Open-ended Questions Discussion Demonstration Brainstorming Problem Solving 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 Science Equipment</p>	<p>7. <i>What is the meaning of human history?</i></p> <ol style="list-style-type: none"> a. History is a meaningful sequence of events leading to the fulfillment of God’s purposes for humanity. (Psalm 22:27-28, Psalm 47:3) b. History is going somewhere, directed toward a known end. (Matthew 25:34) c. History is a form of revelation, not only does God reveal Himself in history, but the very sequence of events is revelation. (Psalm 33:13-14, Psalm 47:9) d. History has meaning because God is behind all events, not only sustaining all things by His powerful word but also in all things working for the good of those who love Him. (Psalm 40:5, Romans 8:28) <p><i>What should our response be to God? What were we made for?</i></p> <p>We were made to Love – Matthew 22:37, Worship – Romans 12:1, Obey – 2 John 6, and Give Glory – Psalm 96:3.</p>
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