

Science, Grade 6

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 6, the study of science includes conducting field and laboratory investigations using scientific methods, analyzing data, making informed decisions, and using tools such as beakers, test tubes, and spring scales to collect, analyze, and record 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>§112.22. Science, Grade 6. (a) Introduction.</p> <p>(1) In Grade 6, the study of science includes conducting field and laboratory investigations using scientific methods, analyzing data, making informed decisions, and using tools such as beakers, test tubes, and spring scales to collect, analyze, 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 components of the solar system including the Sun, planets, moon, and asteroids and learn how seasons and the length of the day are caused by the tilt and rotation of the Earth as it orbits the Sun. Students investigate the rock cycle and identify sources of water in a watershed. In addition, students identify changes in objects including position, direction, and speed when acted upon by a force.</p> <p>(3) Students classify substances by their chemical properties and identify the water cycle and decay of biomass as examples of</p>	<p>Scope and Sequence</p> <ul style="list-style-type: none">• Earthquakes and Volcanoes• Weathering and Erosion• Natural Resources• Cells and Classification• Animal Classification• Plant Classification• Atoms and Molecules• Electricity and Magnetism• Motion and Machines• Stars• Solar System• Plant and Animal Reproduction• Heredity and Genetics• Nervous System• Immune System	<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>the interactions between matter and energy. They identify life processes and the relationships between structure and function of 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. <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 investigative procedures including</p>	<p>Correlation with TEKS <u>Science 6 for Christian Schools</u></p> <p>BJU Press Student ISBN 1-59166-006-8 Teacher ISBN 1-59166-007-6</p> <p>Lessons 4, 5-6, 8-9</p> <p>Chapter 2</p> <p>Chapters 1, 6, 7</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>asking questions, formulating testable hypotheses, and selecting and using equipment and technology;</p> <p>(B) collect data 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 graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data.</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 data 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 6 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, analyze, and record information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, timing devices, hot plates, test tubes, safety goggles, spring scales, magnets, balances, microscopes, telescopes, thermometers, calculators, field equipment, compasses, computers, and computer probes; and</p> <p>(B) identify patterns in collected information using percent, average, range, and frequency.</p> <p>(5) Scientific concepts. The student knows that systems may combine with other systems to form a larger system. <i>The student is expected to:</i></p>	<p>Chapters 1, 6, 7</p> <p>Chapters 1, 6, 7</p> <p>Chapters 1, 6, 7</p> <p>Chapters 1, 6, 7</p> <p>Chapters 1, 4, 5, 7, 8</p> <p>Chapters 1, 4, 5, 7, 8</p> <p>Chapters 1, 4, 5, 7, 8</p> <p>Chapters 1, 4, 5, 7, 8</p> <p>Chapters 1, 4, 5, 7, 8</p> <p>Chapter 2</p> <p>Chapter 4</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>(A) identify and describe a system that results from the combination of two or more systems such as in the solar system; and</p>	Chapter 11	
<p>(B) describe how the properties of a system are different from the properties of its parts.</p>	Chapters 12, 13, 14, 15	
<p>(6) Science concepts. The student knows that there is a relationship between force and motion.</p>		
<p>The student is expected to:</p>		
<p>(A) identify and describe the changes in position, direction of motion, and speed of an object when acted upon by force;</p>	Chapter 1	
<p>(B) demonstrate that changes in motion can be measured and graphically represented; and</p>	Chapter 1	
<p>(C) identify forces that shape features of the Earth including uplifting, movement of water, and volcanic activity.</p>	Chapter 1	
<p>(7) Science concepts. The student knows that substances have physical and chemical properties.</p>		
<p><i>The student is expected to:</i></p>		
<p>(A) demonstrate that new substances can be made when two or more substances are chemically combined and compare the properties of the new substances to the original substances; and</p>	Chapter 7	
<p>(B) classify substances by their physical and chemical properties.</p>	Chapter 7	
<p>(8) Science concepts. The student knows that complex interactions occur between matter and energy.</p>		
<p><i>The student is expected to:</i></p>		
<p>(A) define matter and energy;</p>	Chapter 2	
<p>(B) explain and illustrate the interactions between matter and energy in the water cycle and in the decay of biomass such as in a compost bin; and</p>	Chapter 2	
<p>(C) describe energy flow in living systems including food chains and food webs.</p>	Chapter 13	
<p>(9) Science concepts. The student knows that obtaining, transforming, and distributing energy affects the environment.</p>		
<p><i>The student is expected to:</i></p>		
<p>(A) identify energy transformations occurring during the production of energy for human use such as electrical energy to heat energy or heat energy to electrical energy;</p>	Chapter 2	
		<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>

<p>(B) compare methods used for transforming energy in devices such as water heaters, cooling systems, or hydroelectric and wind power plants; and</p>	Chapter 2	
<p>(C) research and describe energy types from their source to their use and determine if the type is renewable, non-renewable, or inexhaustible.</p>	Chapter 2	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>(10) Science concepts. The student knows the relationship between structure and function in living systems.</p>		b. God’s own intelligence is the basis of human intelligence.
<p><i>The student is expected to:</i></p>		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>(A) differentiate between structure and function;</p>	Chapters 4, 14, 15	
<p>(B) determine that all organisms are composed of cells that carry on functions to sustain life; and</p>	Chapters 4, 14, 15	
<p>(C) identify how structure complements function at different levels of organization including organs, organ systems, organisms, and populations.</p>	Chapters 4, 14, 15	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>(11) Science concepts. The student knows that traits of species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.</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><i>The student is expected to:</i></p>		➤ The Bible is internally consistent and unified in its principles and claims.
<p>(A) identify some changes in traits that can occur over several generations through natural occurrence and selective breeding;</p>	Chapters 5, 6	➤ There is tremendous coherence across the many authors and centuries during which the various books were written and in which its stories unfold.
<p>(B) identify cells as structures containing genetic material; and</p>	Chapters 5, 6	➤ It is relevant to all the cultures of the world
<p>(C) interpret the role of genes in inheritance.</p>	Chapter 13	
<p>(12) Science concepts. The student knows that the responses of organisms are caused by internal or external stimuli.</p>		e. Special revelation is God revealing Himself through supernatural ways. Jesus Christ is the ultimate
<p><i>The student is expected to:</i></p>		
<p>(A) identify responses in organisms to internal stimuli such as hunger or thirst;</p>	Chapter 12	
<p>(B) identify responses in organisms to external stimuli such as the presence or absence of heat or light; and</p>	Chapter 12	
<p>(C) identify components of an ecosystem to which organisms may respond.</p>	Chapter 12	
<p>(13) Science concepts. The student knows components of our solar system.</p>		
<p><i>The student is expected to:</i></p>		
<p>(A) identify characteristics of objects in our solar system</p>	Chapters 10, 11	

<p>including the Sun, planets, meteorites, comets, asteroids, and moons; and</p> <p>(B) describe types of equipment and transportation needed for space travel.</p> <p>(14) Science concepts. The student knows the structures and functions of Earth systems.</p> <p><i>The student is expected to:</i></p> <p>(A) summarize the rock cycle;</p> <p>(B) identify relationships between groundwater and surface water in a watershed; and</p> <p>(C) describe components of the atmosphere, including oxygen, nitrogen, and water vapor, and identify the role of atmospheric movement in weather change.</p>	<p>Chapters 10, 11</p> <p>Chapter 2 Chapter 2</p> <p>Chapters 8, 9</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 Read Aloud</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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	<p>Facilitating Cooperative Learning</p> <p>Evaluation Procedures Observation Class Participation Quizzes/Tests Projects Reports Survey (oral/written) Portfolio</p> <p>Other Resources and Bibliography None</p>	<p>7. <i>What is the meaning of human history?</i></p> <ul 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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