American Christian Academy Science Standards 2025

6th Grade – Life Science
Content Standards

1) Develop and use a model to explain the functions of specific cell structures necessary for maintaining a stable environment, including the cell membrane, cell wall, chloroplasts, endoplasmic reticulum, golgi apparatus, mitochondria, nucleus, ribosomes, and vacuoles.
2) Construct an explanation of how photosynthesis and cellular respiration cycle matter and establish the flow of energy into and out of an organism.
3) Construct an explanation of how the process of mitosis maintains complex organisms and ensures new cells with identical genetic information.
4) Analyze and interpret data to predict how environmental conditions, genetic factors, and resource availability will impact the growth of individual organisms and populations of organisms in an ecosystem.
5) Construct an explanation that predicts patterns of interactions between and among organisms in different ecosystems.
6) Obtain, evaluate, and communicate information about characteristic animal behaviors and specialized plant structures and their effect on the probability of successful reproduction.
7) Develop and use models to demonstrate how genetic variations between parents and offspring result from differences in inherited genes located on chromosomes.
8) Develop and use models to explain how genes are expressed through the flow of genetic information from DNA to RNA to a functional protein.
9) Develop and use models to explain that meiosis results in new genetic combinations with increased variation.
10) Obtain, evaluate, and communicate information on the use of technologies that impact the inheritance and appearance of traits in organisms.
11) Describe the systems of both vertebrate and non-vertebrate animals.
12) Examine the behaviors of animals.
13) Analyze the different systems of the human body and how they work together to function properly.

Biblical Standards

1) Develop and use a model to show how the structure and function of cells and body systems reflect God's design and purpose in creation.
2) Construct an explanation of how natural cycles and ecosystems show God's care and how humans are called to steward His creation.
3) Analyze how genetic traits are passed from parents to offspring, showing God's design in the uniqueness of all living things.

7th Grade – Earth Science
Content Standards

1) Evaluate information to compare and contrast past and current views about the structure of the universe and show how these views have changed over time.
2) Construct an evidence-based explanation of the role of gravity on the movement of natural and manmade objects within galaxies and the solar system.
3) Analyze and use data to determine scale properties and characteristics of objects in the solar system including sizes, distances, orbital periods, basic composition, and ability to support life.
4) Obtain, evaluate, and communicate evidence that explains how constructive and destructive processes shape Earth's surface.
5) Construct an evidence-based explanation of how tectonic plate movement impacts Earth's surface over geological time.
6) Construct an evidence-based explanation of how the sun's energy drives the motion and cycling of water through the hydrosphere.
7) Use data analysis to monitor and predict weather changes and the impact of weather events, including severe weather.
8) Use observations and data from investigations to demonstrate how the sun, air, land, and water affect Earth's climate.
9) Obtain, evaluate, and communicate information concerning the relationships between human activities and natural processes and how those relationships affect Earth's systems, including human population growth and its impact on the global environment over time.

Biblical Standards

1) Construct an evidence-based explanation for God as Creator of the heavens and the earth.
2) Use observations and data from investigations to demonstrate God's order in creation.
3) Obtain, evaluate, and communicate information concerning human stewardship of Earth's resources.

Eighth Grade – Physical Science
Content Standards

1. Plan and carry out investigations to support the claim that pure substances can be described and defined by their properties, including solubility, electrical conductivity, and density.

2. Develop and manipulate models to explain changes in particle motion, temperature, and state of a pure substance when thermal energy is added to or removed from a system.
3. Justify a claim, based on evidence from investigations, that pure substances differ from mixtures, including solutions.
4. Obtain and communicate information from the periodic table, including atomic number, number of electrons and neutrons, average atomic mass, groups, and periods, to illustrate the structure and composition of atoms of different elements.
5. Obtain, evaluate, and communicate information from the periodic table to make predictions about the reactivity of the main group elements.
6. Observe and analyze data regarding characteristic properties of substances before and after they are combined to determine whether a chemical reaction has occurred.
7. Analyze data from an investigation to determine whether thermal energy is released or absorbed in a chemical reaction.
8. Engage in an argument from evidence to support the claim that matter is conserved in a chemical reaction.
9. Use data from an investigation to identify factors that affect acceleration.
10. Analyze graphical displays of data to describe the relationship of mass and velocity of an object to its kinetic energy (KE).
11. Use models to construct an explanation of how a system of objects may contain varying amounts of potential energy, including gravitational, elastic, and chemical.
12. Use models of mechanical and electromagnetic waves to qualitatively describe the relationships among wave properties, including amplitude, wavelength, and frequency.

Biblical Standards

1) Investigate and describe the properties of pure substances, recognizing that God created matter with distinct and measurable characteristics to reflect His order and intentionality.
2) Observe and describe the patterns and predictability in chemical elements, the periodic table, and chemical reactions as a sign of God's orderly nature.
3) Investigate motion and energy transformations, identifying how mass, velocity, and force relate to kinetic and potential energy and how these physical principles reflect the consistent laws God established to govern creation.

Ninth Grade – Biology
Content Standards

1) Engage in evidence-based argument to relate a cell's function to the structure, function, and diversity of its components.
2) Obtain and evaluate information to explain the role of DNA and RNA in transcription and translation leading to protein synthesis and cellular function.
3) Develop and use models to explain how events during the cell cycle lead to the formation of new cells and repair of multicellular organisms, including cell growth, DNA replication, separation of chromosomes, and separation of cell contents.
4) Engage in argument from evidence to explain the regulation of cellular processes that maintain homeostasis, including active and passive transport.
5) Plan and carry out investigations and utilize results to explain the role and cycling of products and reactants involved in the cellular conversion of energy.
6) Develop and use models to illustrate interactions between ecological hierarchy levels, including biosphere, biome, ecosystem, community, population, and organism.
7) Obtain, evaluate, and communicate data to explain how the biodiversity of Alabama contributes to ecosystem services in the state.
8) Engage in argument from evidence to support the claim that characteristics of an ecosystem contribute to its resilience and stability, including ecological succession and recovery from disturbance.
9) Use probability and statistical models to explain the variation of expressed traits within a population.
10) Develop and use an evidence-based model to illustrate the formation of reproductive cells through the process of meiosis.
11) Engage in argument from evidence to explain how populations respond to changes in the environment that can lead to speciation or extinction.

Biblical Standards

1) Analyze man's responsibility to care for and preserve God's creation, recognizing that all living organisms are part of a divinely ordered ecosystem.
2) Evaluate the sanctity and complexity of life, acknowledging that all living beings are uniquely created and worthy of respect and study.
3) Understand God as the Creator of all life and recognize His intentional design and order in biological systems.

10th Grade – Anatomy
Content Standards

1) Obtain, evaluate, and communicate information to explain how differences in cellular structure (mitochondria, cytoskeletal structure, endoplasmic reticulum, cell membrane) lead to differences in the function and organization of the four tissue types (epithelial, connective, muscular, and nervous).

2) Obtain, evaluate, and communicate information to describe how the structures of the integumentary system and its accessory organs contribute to its function.
3) Analyze how the structures of the skeletal system contribute to its function.
4) Examine the structures of the muscular system, including muscle locations, origins, and insertions, and explain their roles in movement and support.
5) Obtain, evaluate, and communicate information explaining the relationship between the structures and functions of the central nervous system and the peripheral nervous system.
6) Construct an explanation of how the interdependence of the nervous and endocrine systems maintains homeostasis.
7) Obtain, evaluate, and communicate information describing the structure of lymph nodes and primary cells of the immune system (neutrophils, lymphocytes, monocytes, macrophages, eosinophils, and basophils) and explain their role in inflammation and the body's defense.
8) Obtain, evaluate, and communicate information explaining how the structures of the cardiovascular system are related to its functions.
9) Obtain, evaluate, and communicate information to explain the relationship between the structures and functions of the respiratory system.
10) Obtain, evaluate, and communicate information explaining the relationship between the structures and functions of the digestive system, including absorption and chemical and mechanical digestion.
11) Examine the microanatomy of excretory structures and describe their functions.
12) Compare and contrast the internal and external structures of the female and male reproductive systems and their production of gametes.

Biblical Standards

1) Identify how the Levels of Organization within human anatomy point to the existence of a Devine Creator.
2) Explain how the delicate nature of homeostasis in the body exemplifies God's providential ways in our everyday lives.
3) Demonstrate how all living things exclaim the name of God through the processes of breathing in their Respiratory System.

11th Grade – Chemistry
Content Standards

1) Use the periodic table as a model to predict the structure and properties of atoms and elements.
2) Construct explanations of the formation of intramolecular and intermolecular forces and their effects on atomic and molecular interactions.
3) Develop and use multiple types of models to represent chemical reactions.

4) Use stoichiometric ratios to support the claim that atoms, and therefore mass, are conserved during chemical reactions.
5) Obtain, evaluate, and communicate information concerning factors that affect solubility and the properties of solutions.
6) Make qualitative and quantitative claims, based on ion concentration, about the acidic, basic, or neutral characteristics of a solution.
7) Plan and carry out investigations to determine how the atomic and molecular motion in chemical and physical processes is related to the kinetic molecular theory.

Biblical Standards

1) Compare the consequences of sin with the consequences of chemical reactions.
2) Analyze how the conservation of matter relates to God's order.
3) Examine how God set laws for creation and how these laws relate to atoms and gasses.

12th Grade - Physics
Content Standards

1) Obtain, evaluate, and communicate ideas about kinematics, including scalar quantities (distance and speed) and vector quantities (position, displacement, velocity, and acceleration).
2) Construct explanations of dynamics from evidence, using Newton's laws of motion.
3) Design and carry out experiments to verify that energy and momentum are conserved in closed systems.
4) Use mathematics and computational thinking to analyze the effects of pressure changes and buoyant forces in fluid systems.
5) Develop and use models to analyze the circular motion of objects.
6) Obtain, evaluate, and communicate information concerning static and current electricity.
7) Obtain, evaluate, and communicate information regarding the propagation, properties, and applications of waves.

Biblical Standards

1) Explore the laws of motion and universal gravitation, understanding that the reliability and predictability of these laws reflect the faithfulness and order of God in His creation.

2) Investigate how forces affect motion and explain how predictable patterns in physics point to a Creator who upholds all things.
3) Evaluate how consistent patterns in physics point to a Creator who is both just and orderly.

12th Grade – Marine Science
Content Standards

1) Obtain, evaluate, and communicate information about how and why humans explore our ocean.
2) Obtain, evaluate, and communicate information about the characteristics, physical features, and boundaries of the oceans.
3) Obtain, evaluate, and communicate information to model the flow of energy in the ocean.
4) Obtain, evaluate, and communicate information that describes the complex relationships between weather, climate and the oceans.
5) Obtain, evaluate, and communicate information on how waves and tides are created and their influence on coastal processes.
6) Obtain, evaluate, and communicate information on the physical and chemical properties of seawater and how they influence the structure of the ocean.
7) Obtain, evaluate, and communicate information about how humans use the ocean as a resource and the need for responsible stewardship.
8) Identify and classify the major invertebrate phyla of marine animals.
9) Describe and classify the major marine fish.
10) Identify and summarize the characteristics of other marine vertebrates and describe the adaptations of each group.

Biblical Standards

1) Analyze how humans use the ocean as God's provision and evaluate these actions through a biblical lens of faithful stewardship—recognizing divine ownership, exercising dominion as caretakers and demonstrating love for neighbor and future generations.
2) Describe how the physical and chemical properties of seawater reflect God's intentional design and order in creation and evaluate how these properties reveal His provision and sovereignty over the oceans as declared in Scripture.
3) Describe the diversity and complexity of marine invertebrates as a reflection of God's creative power and understand that each organism—no matter how small—reveals aspects of His design and glory, encouraging humility and awe toward the Creator.