



Cincinnati Hills Christian Academy

Lower School Upper Elementary – Science

Scope and Sequence

Vision: Science is a method of inquiry founded upon the order of the natural world and the design of its Creator, and in addition, science is an ongoing process that is limited as an investigative tool. Students become responsible, independent, questioning, creative, and organized learners moving from curiosity to familiarity, then mastery of scientific skills, processes, concepts, and theories. Students explore the various disciplines of science through an organized progression of class presentations, hands-on activities, and laboratory investigations that emphasize scientific processes and develop critical thinking skills. Students recognize that science integrates with mathematics, technology, written language, consumer and career interests. Resulting from scientific knowledge, students come to acknowledge personal responsibility as stewards to care for humanity and conserve resources for the glory of God.

Standards: What a CHCA student will know and be able to do in **Science:** *Scientific Inquiry and Application*

- Observe and identify questions that can be investigated about the natural world
- Generate and evaluate scientific evidence and explanations using the scientific method, models, mathematics, and appropriate technology
- Distinguish scientific evidence from opinion and exhibit critical thought to distinguish between fact, myth, and theory
- Understand the nature and development of scientific knowledge
- Participate productively in scientific practices and discourse
- Practice safe and appropriate use of scientific instruments, materials, equipment, and procedures *In Physical, Life, Earth and Space Science*
- Exhibit knowledge of the historical development in science
- Understand the unifying concepts and processes of science: systems, organization, rules of evidence, models, explanations, measurement, change, equilibrium, and structure-function relationships
- Identify questions and apply skills, concepts and processes to construct further knowledge and understanding using inquiry-based investigations *In Theological Integration*
- Recognize that science plays a profound role in personal and social perspectives relating to natural resources, environmental quality, health, hazards, and global challenges utilizing the biblical directive to be good stewards from a scientific and Christian perspective
- Recognize that science is a human endeavor where people interpret scientific knowledge and ethical conduct based on historical context and their personal faith and beliefs
- Understand God’s revelation in such verses as: “Ever since the creation of the world His invisible nature, namely, His eternal power and deity, has been clearly perceived in the things that have been made.” [Rom 1:19-20] As well: Gen.1,2; Job 38-41; Psalm 19:1-6; Psalm 24:1-2.

Grade 4 Topics: Animal Classification studies special characteristics of vertebrates and invertebrates; Rocks/Minerals and Fossils investigates identification and formation; Space studies the relation of Earth, Sun and Moon; Chemistry investigates matter and energy using hands-on experiments, introduces atomic structure, Periodic Table, chemical/physical changes, bonding, and reaction chemistry; Body Systems introduces major body organs with focus on healthy lifestyle. Technology aids student projects. Hands on science laboratory experience in concert with classroom science instruction.

Grade 5 Topics: A problem-based inquiry course focused on developing the skills that students will use both in this grade and following. Students begin the year exploring the world of plants from the roots up. Through a series of investigations, they uncover the purpose and function of the various structures of plants, infer the needs of plants, and discover how plants are designed to obtain those needs. In the Electricity and Magnetism unit, students focus on properties of magnets and the fundamental elements of electricity and electrical circuits.



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Throughout the Simple Machines unit, students investigate how forces work to change energy from one form to another and how machines reduce the effort force needed to do work. Finally, the Ecology unit invites students to explore a new species introduced into an ecosystem. The students simulate the effect of competition, predation, and other factors on population size. The Creator’s design is examined within each unit of study and the impact of His creation is explored in overlying ideas.

Grade 6 Topics: A problem-based inquiry course focused on earth science and learning to interpret evidence. Students explore the various inorganic systems of our planet and how those systems contribute to the earth’s “story.” In the Geology unit students examine soils, minerals, rocks, and the rock cycle. In Shaping the Land unit students explore erosion and deposition, plate tectonics, and earthquakes and volcanoes. In the Water and Climate unit students investigate climate and rainfall patterns, wind, the water cycle, and the distribution of solar energy on the earth. In the Astronomy unit students study the earth’s rotation, seasons, moon phases, tides, planets and the solar system, and gravity and orbital motion. All topics integrate the concept of God as creator, and our part in His “bigger story” of earth’s history.