



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 and Core Competencies

Students work to master the following overarching skills:

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Obtaining, evaluating, and communicating information
- Theological Integration

Grade 4 Topics: Scientific Process: asking questions, defining problems, developing models, investigating, analyzing data, designing solutions, communicating findings; **Energy Transfer and Conversion:** potential, kinetic, collisions, wave properties; **Earth's Atmosphere:** structure and properties in the air around us, the roles of water in the Earth's surface processes, heating the Earth (conduction and convection); **Chemistry:** matter and its physical properties with a focus on Mixtures and Solutions

Grade 5 Topics: A phenomena-based inquiry course focused on developing the skills that students will use both in this grade and in the years following. Students start the year looking at their world through the lens of systems, both large and small. In **Living Systems**, students explore the four Earth systems, and then bring their focus to the biosphere as they investigate ecosystems and organisms in terms of their interacting parts. They think about systems on different scales and different contexts, investigating nutrient systems, transport systems, and sensory systems in plants, animals, humans, and within ecosystems. In **Electromagnetism**, students measure the force of invisible magnetic fields, learn to build a circuit, design an electromagnet, and explain the energy transfers that make it all possible. In **Diversity of Life**, students consider what it means to be a living organism and explore the 6 major kingdoms of life on earth, learning beginning cell theory and developing basic microscope skills. The Creator's design is examined within each unit of study and the impact of His creation is explored in overlying ideas.



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Grade 6 Topics: A problem-based inquiry course focused on earth science, human impact, and the interpretation of evidence. Students explore the various inorganic systems of our planet and how those systems contribute to the earth’s “story” in the context of human activities. In **Interactions**, students assess water quality, study erosion, and learn about the water cycle and climate. In **Processes**, students investigate plate tectonics, rock formation, and the geological history of the Earth. In **Resources**, students evaluate worldwide use of natural resources based on their properties and availability in the context of Earth’s increasing population and demand for natural resources. In **Astronomy**, students study the earth’s rotation, seasons, moon phases, tides, planets and the solar system, and gravity and orbital motion. All topics integrate engineering, experimental design, and data analysis, while working within the world-view of God as creator, and our part in His “bigger story” of earth’s history.