

Science

The foundation for any study of science is the truth of God as the Creator and sustainer of all things. The science department will help students to understand the principals of science from the perspective of God's truth about Himself and His Creation. All of the science courses will provide students a foundation of scientific study grounded in Biblical truth. The core of the science curriculum is the physics, chemistry and biology courses.

Science requirements for graduation are three years of science in the following order: Physics, Chemistry, and Biology.

Students may only take *one* of the three required courses – Physics, Chemistry, Biology - during summer school. The remaining two science classes must be taken during the regular school year. *Students interested in taking AP or Honors level courses in science are encouraged to take all science classes during the regular school year.*

<u>Grade 9</u>	<u>Grade 10</u>	<u>Grade 11</u>	<u>Grade 12</u>
Integrated Science	Physics Fundamentals	Chemistry	Biology
Physics Fundamentals	Physics	Chemistry (H)	Biology (H)
Physics	Physics (H)	AP Chemistry (H)	Anatomy/Physiology
Physics (H)	Chemistry	Biology	AP Biology (H)
	Chemistry (H)	Biology (H)	AP Chemistry (H)
		Anatomy/Physiology	AP Physics (H)
		AP Physics (H)	

INTEGRATED SCIENCE

Integrated Science offers an introduction to three main subject areas: Chemistry, Physics, and Earth Science. Specific topics include: scientific skills and measurement; properties and states of matter; atomic structure; the periodic table; chemical bonds and reactions; forces of motion; work, energy, and power; properties of the earth; weather cycles; and the solar system. Hands-on learning is emphasized via participation in a variety of labs and group activities.

Grade Level: 9 Semesters: 2

PHYSICS/PHYSICS (H)

This course uses a conceptual approach to Physics featuring hands-on interactions with the subject matter. The format maximizes the students' critical thinking and understanding of the everyday world without requiring the use of higher-level mathematics. Topics include: Mechanics, Sound and Light, Relativity, Electricity and Magnetism, Atomic and Nuclear Physics.

Prerequisite: Algebra I or by placement; Geometry Honors (or concurrently). **See General Honors/AP Course Requirements on page 16.**

Grade Level: 9, 10 Semesters: 2

PHYSICS FUNDAMENTALS

This course uses a conceptual approach to Physics featuring hands-on interactions with the subject matter. The format increases the students' understanding of the everyday world with a minimal emphasis on mathematics. Topics include: Mechanics, Sound and Light, Relativity, Electricity and Magnetism, Atomic and Nuclear Physics.

Prerequisite: By placement only
Grade Level: 9, 10 Semesters: 2

CHEMISTRY/ CHEMISTRY (H)

Chemistry is the ongoing investigation of matter - its composition, structure, properties, and changes thereof. Chemicals and their properties affect our lives in more ways than we can imagine. Students will learn about chemistry through lectures, demonstrations and labs. Although the majority of the course revolves around inorganic chemistry, topics in organic chemistry are included.

Prerequisites: Physics, Geometry (or concurrently); (H) Physics and College Algebra (or concurrently). **See General Honors/AP Course Requirements on page 16.**

Grade Level: 10, 11 Semesters: 2

Science (continued)

BIOLOGY/BIOLOGY (H)

This course takes an environmental approach to Biology, proceeding from the cell up to the organization of the biosphere. Topics include: Cells, Heredity, Creation & Evolution, Structure of Plants and Animals, Ecology and Environmental concerns.

Prerequisites: Chemistry; **(H)** See **General Honors/AP Course Requirements on page 16.**

Grade Level: 11, 12 **Semesters:** 2

ADVANCED PLACEMENT PHYSICS (H)

This course uses mathematics to study matter and energy in their various forms and applications. Students are given the opportunity to test and discover the concepts of physics through application in real-world situations. Major topics included are Mechanics, Electricity and Magnetism. This course is designed to prepare students for more demanding physical sciences and for taking the Advanced Placement Physics test.

Prerequisites: Biology, Trig/Precalc concurrently. See **General Honors/AP Course Requirements on page 16.**

Grade Level: 11, 12 **Semesters:** 2

ADVANCED PLACEMENT CHEMISTRY (H)

Advanced Placement Chemistry builds on the foundation of Chemistry covering the objectives typical of a first-year, college chemistry course. Topics covered are in the areas of stoichiometry, aqueous reactions, thermodynamics, electron configurations, bonding, kinetics, equilibrium, acid-base, electrochemistry, nuclear, and organic chemistry. This course focuses heavily on the development of advanced laboratory skills and prepares students to take the Advanced Placement Exam in Chemistry.

Prerequisite: Honors Chemistry (or by permission), Biology. See **General Honors/AP Course Requirements on page 16.**

Grade Level: 11, 12 **Semesters:** 2

ADVANCED PLACEMENT BIOLOGY (H)

AP Biology builds on the foundation of Biology, taking a hierarchical approach proceeding from the chemistry of the cell up to the organization of the biosphere.

Topics include: Chemistry of Cells, Cells, Cellular Energetics, Heredity, Creation & Evolution, Molecular Genetics, Structure of Plants and Animals, and Ecology. This course is designed to prepare students for more demanding biological pursuits and for taking the Advanced Placement Test.

Prerequisites: Honors Biology (or by permission). See **General Honors/AP Course Requirements on page 16.**

Grade Level: 12 **Semesters:** 2

ANATOMY/PHYSIOLOGY

This course focuses on how the structure of the human body relates to its overall function. In addition to human tissues used in this course, the cat *Felis domestica* is also used as a model for study. Students study the circulatory, respiratory, digestive, nervous, endocrine, urinary, reproductive, integumentary, skeletal, and muscular systems.

Prerequisite: Biology

Grade Level: 11, 12 **Semesters:** 2