

Science

Biology

1 Full Year

1 Credit Hour

Grade: 9

Prerequisite: None

A general course in modern biology. Through lecture/discussion, demonstration and laboratory activities, students explore the study of the cell, cellular processes of membrane transport, energy transformations and reproduction, classical and modern genetics, the changes in life forms on earth, a survey of major taxonomic groups, a study of ecological relationships and a brief introduction to human biology.

Honors Biology

1 Full Year

1 Credit Hour

Grade: 9

Prerequisite: Teacher recommendation and examination of standardized test scores from 8th grade.

An accelerated, in-depth study of modern biological concepts. The course includes a study of the cell, the cellular processes of membrane transport, energy transportation and reproduction, genetics with emphasis on current DNA technology, the changes in life forms on earth, a survey of taxonomic groups, a study of ecological relationships and an introduction to human biology.

AP Biology

1 Full Year

1 Credit Hour

Grades: 11, 12

Prerequisite: A- or above in Chemistry or Honors Chemistry and teacher recommendation.

This course is designed to be the equivalent of a two-semester college introductory biology course. The two main goals are to help students develop a conceptual framework for modern biology and an appreciation of science as a process. Topics: Molecules and Cells; Heredity and Evolution; Organisms and Population.

Human Physiology

1 Full Year

1 Credit Hour

Grades: 11, 12

Prerequisite: B or above in Biology or Honors Biology or C and above in Chemistry and teacher recommendation.

An advanced course in biology with primary emphasis on the human organism. Through lecture, discussion, demonstration and laboratory experiences, students study the cell as the fundamental life unit, the transition from single cell to complex multi-cellular organism, and the anatomy and physiology of human organ systems. Detailed dissection of a representative mammal is included among the laboratory experiences.

Physical Science

1 Full Year

1 Credit Hour

Grades: 10

Prerequisite: Biology

This course introduces students to key concepts and theories that provide a foundation for further study in other sciences and advanced science disciplines. Physical science comprises the systemic study of the world as related to chemistry, physics, and space science. The topics include: the study of matter; forces, motion, and energy; and the universe. This course is inquiry and lab-based and satisfies the Ohio Core requirement for high school graduation.

Chemistry

1 Full Year

1 Credit Hour

Grades: 11, 12

Prerequisite: B or above in previous science; B or above in Geometry, Algebra II, or Algebra II/Trigonometry (may be taken concurrently).

Chemistry is a mathematical, theoretical and laboratory approach to the study of matter and energy. Students investigate matter and energy, atomic structure, periodic tables, chemical bonding, chemical reactions and stoichiometry, solutions, acids and bases, kinetics, and equilibrium.

Honors Chemistry

1 Full Year

1 Credit Hour

Grades: 11, 12

Prerequisite: A in Biology or A- in Honors Biology, a minimum B in Algebra II or Honors Algebra II/Trigonometry (may be taken concurrently) and teacher recommendation.

An accelerated, in-depth, mathematical, theoretical and laboratory approach to the study of matter and energy. Students investigate matter and energy, atomic structure, the periodic table, chemical bonding, nuclear chemistry, chemical reactions and stoichiometry, solutions, acids and bases, kinetics, and equilibrium.

AP Chemistry

1 Full Year

1 Credit Hour

Grades: 11, 12

Prerequisite: B+ or higher in Honors Chemistry or A- or higher in Chemistry and teacher recommendation.

AP Chemistry is an introductory college-level course. Students cultivate their understanding of chemistry through inquiry-based lab investigations as they explore the four big ideas: scale, proportion, and quantity; structure and properties of substances; transformations; and energy.

Physics

1 Full Year

1 Credit Hour

Grades: 11, 12

Prerequisite: B or above in Chemistry or B- or above in Honors Chemistry; B- or above in Honors Algebra II/Trigonometry or 87% or above in Algebra II or B or above in Precalculus or AP Calculus; and teacher recommendation.

The study of physics includes units of mechanics, heat, electricity and magnetism, wave motion, electron and nuclear theory, and electronics. Basic themes such as the conservation laws, the concept of fields, energy, force, and motion are explored in each of these units through lecture and through student laboratory experience.

AP Physics

1 Full Year

1 Credit Hour

Grades: 11, 12

Prerequisite: A in Chemistry or A- in Honors Chemistry; A in Algebra II or A- in Honors Algebra II/Trigonometry, and teacher recommendation.

AP Physics is an algebra-based introductory college-level course. It will cover topics that include kinematics, projectile motion, Newton's Laws, circular motion, gravitation, work & energy, momentum, electrostatics, simple harmonic motion and mechanical waves.

Astronomy

1 Semester

½ Credit Hour

Grades: 11, 12

Prerequisite: B+ or above in Physics or AP Physics and teacher recommendation.

Astronomy provides a physics-based overview of the solar system, the lives and deaths of stars, galaxies, and the evolution of the universe. It explores the basic principles of physics and light, the tools of astronomy, and concepts such as the Big Bang and black holes.

Environmental Science

1 Full Year

1 Credit Hour

Grades: 10, 11, 12

Prerequisite: Biology

This course is designed to advance student's understanding of key concepts, principles, and theories of earth systems, earth's resources, and the human impact on the environment, as well as the Catholic responsibility to be stewards of the environment. Student's will identify connections and interactions between earth's biosphere, atmosphere, lithosphere, and hydrosphere. Students will apply knowledge from previous science courses to critically think about global environmental problems and issues.