**SCIENCE DEPARTMENT**

**3024 Biology I**

Biology I is a course based on regular laboratory and field investigations that include a study of the structures and functions of living organisms and their interactions with the environment. At a minimum, students enrolled in Biology I explore the functions and processes of cells, tissues, organs, and systems within various species of living organisms and the roles and interdependencies of organisms within populations, communities, ecosystems, and the biosphere. Students work with the concepts, principles, and theories of the living environment. In addition, students enrolled in this course are expected to: (1) gain an understanding of the history and development of biological knowledge, (2) explore the uses of biology in various careers, and (3) investigate biological questions and problems related to personal needs and societal issues.

• Recommended Grade Level: 9

• Credits: A two credit course

• Fulfills the Biology requirement for all diploma options

#### 3020 Biology, Advanced Placement

Biology, Advanced Placementis a course based on the content established by the College Board. The major themes of the course include: The process of evolution drives the diversity and unity of life, Biological systems utilize free energy and molecular building blocks to grow, to reproduce and to maintain dynamic homeostasis, Living systems store, retrieve, transmit and respond to information essential to life processes, Biological systems interact, and these systems and their interactions possess complex properties.

• Recommended Grade Levels: 11, 12

• Recommended Prerequisites: Biology I and Chemistry I

• Credits: A two credit course, 1 credit per semester

• Counts as a Science elective for all diploma options

• Students enrolled in this course will be required to take the AP exam.

3108 Integrated Chemistry-Physics (ICP)

Integrated Chemistry-Physics is a laboratory-based course in which students explore fundamental chemistry and physics principles. Students enrolled in this course examine, through the process of scientific inquiry, the structure and properties of matter, chemical reactions, forces, motion and the interactions between energy and matter. Working in a laboratory environment, students investigate the basics of chemistry and physics in solving real-world problems that may have personal or social consequences beyond the classroom.

• Recommended Grade Levels: 10, 11

• Recommended Prerequisite: Algebra I (may be taken concurrently with this course)

• Credits: A two credit course

• Fulfills the Physical Science requirement for Core 40 and Honors Diplomas

#### 3064 Chemistry I

Chemistry I is a course based on regular laboratory investigations of matter, chemical reactions, and the role of energy in those reactions. Students enrolled in Chemistry I compare, contrast, and synthesize useful models of the structure and properties of matter and the mechanisms of its interactions. In addition, students enrolled in this course are expected to: (1) gain an understanding of the history of chemistry, (2) explore the uses of chemistry in various careers, (3) investigate chemical questions and problems related to personal needs and societal issues, and (4) learn and practice laboratory safety.

• Recommended Grade Levels: 10, 11, 12

• Recommended Prerequisite: Algebra II (may be taken concurrently with this course)

• Credits: A two credit course

• Fulfills a Chemistry I requirement for the Core 40 and Honors Diplomas

#### 3066 Chemistry II: Organic Chemistry

#### Organic Chemistry is an extended laboratory, field, and literature investigations-based course. Students enrolled in Chemistry II examine the chemical reactions of matter in living and nonliving materials. Based on the unifying themes of chemistry and the application of physical and mathematical models of the interactions of matter, students use the methods of scientific inquiry to answer chemical questions and solve problems concerning personal needs and community issues related to chemistry.

#### • Recommended Grade Level: 11-12

#### • Recommended Prerequisite: Chemistry I, Algebra II

#### • Credits: A two credit course

#### • Fulfills science elective for all diploma options

#### • Qualifies as a quantitative reasoning course

**5276 Anatomy & Physiology**

Anatomy & Physiology is a course in which students investigate concepts related to Health Science, with emphasis on interdependence of systems and contributions of each system to the maintenance of a healthy body. Introduces students to the cell, which is the basic structural and functional unit of all organisms, and covers tissues, integument, skeleton, muscular and nervous systems as an integrated unit. Through instruction, including laboratory activities, students apply concepts associated with Human Anatomy & Physiology. Students will understand the structure, organization and function of the various components of the healthy body in order to apply this knowledge in all health related fields.

• Recommended Grade Level: Grade 11, 12

• Recommended Prerequisites: Biology

• Credits: 1 credit per semester, maximum of 2 credits

• Fulfills a science elective for all diploma choices

#### 3060 Chemistry, Advanced Placement

Chemistry, Advanced Placementis a course based on the content established by the College Board. The content includes: (1) structure of matter: atomic theory and structure, chemical bonding, molecular models, nuclear chemistry; (2) states of matter: gases, liquids and solids, solutions; and (3) reactions: reaction types, stoichiometry, equilibrium, kinetics and thermodynamics.

• Recommended Grade Levels: 11, 12

• Recommended Prerequisite: Chemistry I, Algebra II, Precalculus/Trigonometry

• Credits: A two credit course

• Counts as a Science Course for all diploma options

• Students enrolled in this course will be required to take the AP exam.

#### 3084 Physics I, Advance Placement

AP Physics I is the equivalent to a first-semester college course in algebra-based physics and is based on content established by the College Board. The course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy, and power; and mechanical waves and sound. It will also introduce electric circuits. Instruction should focus on developing student understanding that scientific knowledge is gained from observation of natural phenomena and experimentation by designing and conducting investigations guided by theory and by evaluating and communicating the results of those investigations according to accepted procedures.

• Recommended Grade Levels: 11, 12

• Recommended Prerequisite: Algebra II

• Credits: A two credit course

• Counts as a Science Course for all diploma options

• Students enrolled in this course will be required to take the AP exam.

**3080 Physics II, Advanced Placement**

Physics II, Advanced Placementis the equivalent to a second-semester college course in algebra-based physics and is based on content established by the College Board. The course covers fluid mechanics; thermodynamics; electricity and magnetism; optics; and atomic and nuclear physics.

• Recommended Grade Level: 12

• Recommended Prerequisite: Physics I, Pre-Calculus/Trigonometry, Chemistry I

• Credits: A two credit course

• Counts as a Science Course for all diploma options

• Students enrolled in this course will be required to take the AP exam.

**5070 Advanced Life Science: Animals**

Advanced Life Science: Animals provides students with opportunities to participate in a variety of activities including laboratory work. Students investigate concepts that enable them to understand animal life and animal science as it pertains to agriculture. Through instruction, including laboratory, fieldwork, leadership development, supervised agricultural experience and the exploration of career opportunities, they will recognize concepts associated with animal taxonomy, life at the cellular level, organ systems, genetics, evolution, and ecology, historical and current issues in animal agriculture in the area of advanced life science in animals.

• Recommended Grade Level: Grade 11-12

• Recommended Prerequisites: Chemistry and Biology

• Credits: 1 per semester

• Fulfills a Core 40 Science elective

• Qualifies as a quantitative reasoning course