

HIGH SCHOOL CURRICULUM

Physical Science This course includes a general study of the principles of basic chemistry and physics. Chemistry topics include physical and chemical properties and changes, classification of the elements along with the study of The Periodic Table of the Elements, atoms and chemical bonding, balancing equations, and acids and bases. Physics topics include speed, velocity, acceleration, work, power, and energy. Challenging laboratory work are integral parts of this course. *Prerequisites: Science 7 and Science 8*

Physical Science Honors With more emphasis being placed on mathematics, Physical Science Honors includes a general study of the principles of basic chemistry and physics. Chemistry topics include physical and chemical properties and changes, classification of the elements along with the study of The Periodic Table of the Elements, atoms and chemical bonding, balancing equations, and acids and bases. Physics topics include speed, velocity, acceleration, work, power, mechanical advantage, efficiency, and energy. Interactive classroom experiences and challenging laboratory work are integral parts of this course. *Prerequisites: No grade lower than a B in previous science or math courses and/or qualifying standardized test scores*
Corequisite: Enrollment in Algebra I Honors

Biology I Biology I concentrates on the principles of cell structures, biochemistry, genetics, evolution, vertebrates and invertebrates, and ecology. Biology students will use digital microscopes to create many of their lab reports. Students also engage in dissections. *Prerequisite: Physical Science*

Biology I Honors Biology I Honors is an in-depth study of the topics outlined above for the highly motivated and scientifically oriented student. Use of the digital microscope is essential to this course. Students also engage in dissections to aid the learning process. *Prerequisite: Physical Science Honors and no grade lower than a B in previous science courses and/or qualifying standardized test scores*

Biology II Biology II is designed for students that are interested in the study of living thing but have not taken honors courses in previous science classes. This course includes a study of molecular biology, classification, and comparative anatomy. The digital microscope, along with dissections, is essential to this course. *Prerequisite: Physical Science, Biology I, and Chemistry*

AP Biology II This course is designed to meet the needs of the advanced student. Along with an in-depth study of cellular biology and chemistry, classification and phylogeny are also studied. Sophisticated laboratory work is an important part of this course. *Prerequisites: Physical Science Honors, Biology I Honors, and Chemistry I Honors; no grades lower than a B in previous science courses and/or qualifying standardized test scores; may not be taken concurrently with Human Anatomy and Physiology*

Chemistry I Chemistry I is a course emphasizing concepts regarding matter, changes in matter, and calculations based upon those reactions. It is an in-depth study of The Periodic Table of the Elements, including the study of covalent and ionic bonding, along with the study of valence electrons. *Prerequisites: Physical Science, Biology I, and Algebra I*

Chemistry I Honors Chemistry I Honors is a course emphasizing concepts regarding matter, changes in matter, and calculations based upon those reactions. It is an in-depth study of The Periodic Table of the Elements, including the study of covalent and ionic bonding, along with the study of valence electrons. It is supplemented with a richer and more in-depth look at stoichiometry, limiting reactants, excess reactants, molarity and molality. This course is for the more scientifically oriented and highly motivated student. Students write laboratory reports based upon lab abstracts and follow through in exciting laboratory experimentation. *Prerequisites: Physical Science Honors, Biology Honors, and Algebra I Honors; no grades lower than a B in previous science and math courses and/or qualifying standardized test scores*

Chemistry II Honors This chemistry course is designed to enrich and enhance the study of basic chemistry. Building on the topics studied in Chemistry I, it introduces the student to reaction rates, equilibrium, electrochemistry, pH calculations, oxidation-reduction reactions, and the study of carbon compounds. This course is designed to meet the needs of self-motivated students who will be entering the medical profession or who plans to major in a science related field. The student must have an exceptional working knowledge of Chemistry I and must be capable of working independently. *Prerequisites: Physical Science Honors, Biology I Honors, Chemistry I Honors, Algebra I Honors and Algebra II Honors; no grades lower than a B in previous science and math courses and/or qualifying standardized test scores*

Environmental Science This course is designed to introduce students to major ecological concepts and the environmental problems that affect the world in which we live. The course is an overview of topics and disciplines necessary for understanding environmental issues and challenges of the world today. Topics include the biological and chemical principles that relate to current environmental issues such as global warming, endangered species, acid rain, invasive plants and animals, and conservation. Additionally, students will gain knowledge on solutions to these problems. *Prerequisite: Junior or Senior standing*

Environmental Science Honors This course is designed to introduce students to major ecological concepts and the environmental problems that affect the world in which we live. The course is a high-powered look at the disciplines necessary for understanding the complex environmental issues and challenges of the world today. Topics include the biological and chemical principles that relate to global warming, endangered species, acid rain, invasive plants and animals, and conservation. Additionally, students will gain knowledge on solutions to these problems. The Environmental Science Honors program is a unique blend of chemistry and the natural sciences where students will study human attitudes toward the environment and how these attitudes affect our way of life. Students will be exposed to topics through lecture, laboratory exercises, and field work. *Prerequisite: Junior or Senior standing*

Human Anatomy and Physiology This course utilizes a systems approach to examine the structure and function of the human body. It introduces students to details of each of the organ systems of the human body, along with diseases of these systems. The course is designed for the student considering a medical related field. *Prerequisites: Physical Science, Biology I, and Chemistry I; no grade lower than a B in previous science courses and/or qualifying standardized test scores*

Physics This is a course in classical physics. Students will find both conceptual and mathematical solutions to questions in order to develop a solid foundation in the principles of physics. Topics covered include kinematics, force, work and power, energy, waves, sound and light, and mirrors and lenses. *Prerequisites: Physical Science, Biology, Chemistry I; completion of/or concurrent enrollment in Advanced Math: Precalculus*

Physics Honors This is a rigorous course in classical physics. Students will find both conceptual and mathematical solutions to questions in order to develop a solid

foundation in the principles of physics. Topics covered will include kinematics, force, momentum, work and power, energy, waves, sound and light, mirrors and lenses, and electricity. Topics will be covered in more depth and using more advanced mathematics than in Physics. *Prerequisites: Physical Science Honors, Biology Honors, Chemistry I Honors; completion of/or concurrent enrollment in Advanced Math: Precalculus; no grade lower than a B in previous honors science classes and/or qualifying standardized test scores*

AP Physics 1 AP Physics 1 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of Physics through inquiry-based investigations as they explore these topics: kinematics, dynamics, circular motion and gravitation, energy, momentum, simple harmonic motion, torque and rotational motion, electric charge and electric force, DC circuits, and mechanical waves and sound. Students must be highly motivated, able to move at a fast pace, and work well in groups. A highly developed conceptual mathematics ability is a must, along with the ability to independently apply knowledge to new situations. Students will be prepared for and are encouraged to take the AP Physics 1 exam for college credit at the conclusion of this course. *Prerequisites: Physical Science Honors, Biology Honors, Chemistry I Honors, Algebra I Honors, Algebra II Honors; completion of/or concurrent enrollment in Advanced Math: Precalculus; no grade lower than a B in previous honors science and math classes and/or qualifying standardized test scores. Highly recommended: No grade lower than an A in Chemistry Honors, no grade lower than an A in Algebra II Honors, and recommendation of Chemistry Honors and Algebra II Honors teachers.*

Robotics This course introduces the fundamental concepts of programming and robotics. A robot is an embedded system of software and hardware. Using robots, we will cover the fundamentals of problem solving, program design, algorithms and programming using a high-level language. Students will also learn basic physics concepts as they apply to building and programming robots.

Prerequisites: Sophomore or higher