SCIENCE

Physics

This introductory course stresses deep conceptual understanding of physical principles as they apply to everyday life. The course covers selected topics in mechanics. The physics course offers a balance of qualitative reasoning and conceptual understanding with quantitative reasoning and problem solving.

Grade Level: 9
Classification: Core
Credit: 1
Prerequisite: None

Physics Honors

This inquiry-based course aims to develop an understanding and appreciation of fundamental physics concepts as they apply to everyday life. This course offers an in-depth analysis of a variety of topics that include mechanics along with selected topics in modern physics. Honors Physics moves at a slightly faster pace than the Physics course and uses algebra and trigonometry in problem solving.

Grade Level: 9
Classification: Core
Credit: 1
Prerequisites: Placement test and teacher recommendation

Chemistry

This course introduces the fundamental concepts of chemistry as a physical science. Topics covered in this course include the structure of matter; the periodic table; atomic theory and atomic structure; chemical bonding; writing and naming chemical compounds; classifying, balancing, predicting products for chemical reactions; and calculations with chemical quantities. Emphasis will be placed on laboratory techniques and problem solving.

Grade Level: 10
Classification: Core
Credit: 1
Prerequisite: Physics

Chemistry Honors

This course offers an in depth study of introductory chemistry. The topics covered include the structure of matter, the periodic table, chemical bonding, nomenclature, molecular geometry, solubility, stoichiometry, acid-base reactions, nuclear chemistry. This faster paced course contains abstract concepts and requires higher mathematical problem-solving skills than the college preparatory course. Chemistry Honors prepares students for AP Chemistry.

Grade Level: 10
Classification: Core
Credit: 1
Prerequisites: B or above in Honors Physics or A or above in Physics and teacher recommendation

Biology

This course introduces students to the mechanisms and diversity of life within an evolutionary context. Essential themes of biology are integrated across the topics covered: biological systems, the cellular basis of life, form and function, inheritance, interaction with the environment, energy and life, regulation, adaptation and evolution. Laboratory exercises are performed to reinforce concepts, and current events are used to supplement discussions. Outstanding students who complete this course are encouraged to consider AP Biology as an option for the following year.

Grade Level: 11
Classification: Core
Credit: 1
Prerequisite: Chemistry

Biology Honors

This course focuses on life's organizational hierarchy, emergent properties, cellular basis, unity in diversity, and inheritance of biological information. Through laboratory experiences, demonstration and lecture, emphasis is placed on the correlation of form and the function of living things. A common core theme of evolution underscores the dynamic nature of life. This fast paced course utilizes advanced laboratory techniques and serves as a lead-in for students with intent to take AP Biology.

Grade Level: 11
Classification: Core
Credit: 1
Prerequisites: B or above in Honors Chemistry or A or above in Chemistry and teacher recommendation

Anatomy and Physiology

This year-long course introduces students to the complexity of the human body through the dual discipline study of anatomy and physiology. The course explores the intertwined relationship between the structure and function of the organ systems, development of the body, disorder and disease, as well as examining the implication of current research in the field. Through lab, lecture, and research, students develop not only an understanding of this biological specialization, but get hands-on experience building their own MANIKEN model.

Grade Level: 12; Juniors with teacher approval
Classification: Core
Credit: 1
Prerequisites: Physics, Chemistry, and Biology

Bioengineering and Bioethics

This course will introduce students to the technology used to analyze and manipulate biomolecules (such as DNA) in medicine, agriculture,and forensics. The ethical ramifications of this ability will be explored in depth. The crossover between STEM and humanities will be emphasized as we explore what we can do in a biotechnology lab in light of what we should do in a biotechnology lab.

Grade Level: 12; Juniors with teacher approval
Classification: Core
Credit: 1
Prerequisites: Physics, Chemistry, and Biology

Environmental Science

The activity-based environmental science course provides students with the scientific principles and methodologies required to understand the interrelationships of the natural world to identify and analyze environmental problems both natural and human made, to evaluate the relative risks associated with these problems, and to examine and propose alternative solutions to resolving or preventing them.

Grade Level: 12; Juniors with teacher approval
Classification: Core
Credit: 1
Prerequisites: Physics, Chemistry, and Biology

AP Biology

This college-level survey course follows the Advanced Placement curriculum with a focus on four big ideas:
1. The process of evolution drives the diversity and unity of life.
2. Biological systems utilize energy and molecular building blocks to grow, reproduce and maintain homeostasis.
3. Living systems retrieve, transmit and respond to information essential to life processes.
4. Biological systems interact and these interactions possess complex properties.

There is a significant laboratory component with both descriptive and experimental laboratory exercises designed to reinforce and expand the facts, principles, and concepts of the lecture material. This course prepares students to take the AP Biology examination.

Grade Level: 12; Juniors with teacher approval
Classification: Core
Credit: 1
Prerequisites: B+ or above in Honors Biology or A or above in Biology and teacher recommendation

AP Chemistry

AP Chemistry is an introductory college-level chemistry 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. There is a laboratory component with both descriptive and experimental laboratory exercises designed to reinforce and expand the concepts of the lecture material. This course builds on the skills learned in Chemistry and expands on the topics learned (stoichiometry, reaction predictions, intermolecular forces and periodic trends). Additional major topics covered include thermodynamics, kinetics, equilibrium, and electrochemistry. The course prepares students to take the AP Chemistry examination. This course has the option for dual credit through a partnership with Dallas College. Students will have to meet eligibility standards for Dallas College, including additional testing requirements, to qualify for dual credit.

Grade Level: 11
Classification: Core
Credit: 1
Prerequisites: B or above in Honors Chemistry or A or above in Chemistry and Biology and teacher recommendation

AP Physics C: Mechanics

AP Physics C: Mechanics is a college-level, calculus-based course. AP Physics C provides instruction in basic physics knowledge and problem solving and aims to increase the students' ability to connect their knowledge to the real world with creativity and within other disciplines. The Physics C: Mechanics course provides instruction in the following six content areas: kinematics; Newton's Laws of motion; work, energy and power; systems of particles and linear momentum; circular motion and rotation; and oscillations and gravitation. Because of the nature of the course, introductory differential and integral calculus is used throughout the course. There is a significant laboratory component with both descriptive and experimental laboratory exercises designed to reinforce and expand the facts, principles, and concepts of the lecture material.

Classification: Core
Credit: 1
Prerequisites: Concurrent enrollment in either AP Calculus course and teacher recommendation

AP Psychology

This course introduces students to both the historical and current thinking in the field of psychology. The study of psychology as a process is stressed with a focus on methods. We will introduce the different perspectives of psychology including biological, behavior, cognition, psychoanalytic, and social-cultural to examine how they impact our daily lives. This course is designed to spark an interest in the field of psychology and should prepare students to take more advanced psychology courses in the future. Class participation is vital in this discussion/project-based course. The readings are used to initiate and propel class discussion and provide a jumping off point for projects. Students conduct their own research and produce original work. Students successfully completing this course should be more confident in their abilities to understand their own beliefs about the science of human behavior. This course does not replace a required science course or science elective.

Grade Level: 12
Classification: Core
Credit: 1
Prerequisites: B- or above in Biology and teacher recommendation