

SCIENCES



Enrichment is available for students who are deeply interested in the sciences and who are enthusiastic about exploring new topics outside of the classroom. Students engage with their grade level curriculum in a standard science class and, with teacher support, work independently to extend their learning. Enrichment opportunities could include a science fair experiment or an inquiry project, as well as engaging with science in the community.

SCIENCE 8

The Science curriculum includes content from biology, chemistry, physics, and earth and space sciences. The curriculum gives students the opportunity to develop the skills, processes, attitudes, and scientific habits of mind that allow them to pursue their own inquiries using scientific methods. Using critical thinking, creative insight, and their current scientific knowledge, students collaborate, investigate, problem solve, communicate, innovate, discover, and increase their understanding of science through hands-on experience. Students have opportunities to develop personal and social awareness of their roles and responsibilities with respect to the environment. By cultivating an appreciation for the field of science, students can recognize opportunities to apply their knowledge in their everyday lives or contribute to science in their future careers.

SCIENCE 9

The Science curriculum gives students the opportunity to develop the skills, processes, attitudes, and scientific habits of mind that allow them to pursue their own inquiries using scientific methods.

Building on laboratory skills and the methods of scientific inquiry introduced in Science 8, students discover some of the more basic principles of physics, chemistry, ecology, and biology through experimentation and class activities. In Science 9, students study concepts such as cell division, atoms, elements and reproduction, electricity, and ecosystems and sustainability.

SCIENCE 10

Science 10 continues to introduce and use the methods and applications of science. This course further develops the study of Chemistry, Physics, Biology and Astronomy. Science 10 is designed to provide opportunities for students to develop scientific knowledge, skills, and attitudes that will be relevant in their everyday lives and their future careers. Topics covered in the regular course are: genetics, chemical reactions and radioactivity, energy and astronomy.

LIFE SCIENCES 11

Life Sciences 11 is a survey course of the five kingdoms of life. Students are provided with opportunities to learn about all living things as well as the evolution of life on our planet and the ecological relationships between organisms. Under these themes, the Life Sciences 11 curriculum is organized into seven main sections: processes of Science, Taxonomy, Evolution, Ecology, Microbiology, Plant Biology and Animal Biology. Students will develop a strong understanding of biological terminology as the course progresses. Dissections are integral parts of this course, as well. Life Sciences 11 is strongly recommended for students wishing to take Anatomy and Physiology 12.

CHEMISTRY 11

Chemistry 11 is designed as an introduction to chemical concepts for students with a general interest in Chemistry as well as for those who require Chemistry for more advanced study in the Sciences and is recommended for Biology 12. These concepts include the use of the Periodic table, the mole concept, lab safety and techniques, chemical reactions and atomic structure. There is emphasis on doing labs and mastering skills introduced during the course. Ability in mathematics and a foundation in algebraic manipulation is an asset.

PHYSICS 11

Physics 11 is an introductory course that focuses on the principles and theories of physics, encourages investigation of physical relationships, and illustrates the relationship between theory and application. The application of physics to everyday situations is highlighted throughout the curriculum. The organizers in this course have been chosen to be representative of physics, and the skills and knowledge provide a solid base for further study. The Physics 11 curriculum is organized into seven main sections: wave motion and geometrical optics, kinematics, dynamics in one dimension, energy, special relativity, and nuclear fission and fusion.

SCIENCE FOR CITIZENS 11

Science for Citizens 11 invites students to explore scientific concepts and processes that are relevant to their daily lives. It focuses on application of knowledge to real-world situations, and helps students build their skills in the areas of evidence-based decision making and scientific literacy. This course incorporates hands-on and project-based learning as often as possible.

The curriculum in Science for Citizens is flexible, allowing each class to pursue topics of interest. Possible units include human health, environmental science, forensics, household chemistry, disaster preparedness, lab skills and procedures (including workplace safety), forces and machines, engineering/design, and more. Because the topics in this course are not the same from year to year, some post-secondary programs do not accept Science for Citizens as a science entrance requirement. Students wishing to pursue post-secondary studies should check their program requirements when selecting a Science 11 course.

ANATOMY AND PHYSIOLOGY 12

Anatomy and Physiology 12 is a comprehensive course on cell and human physiology. The focus of the course is on how organ systems work together to maintain the health of the human body. In addition, students study introductory biochemistry, cell organelles and protein synthesis. An ability to work with and understand extensive biological terminology is essential.

AP BIOLOGY (**taken with Anatomy and Physiology 12*)

AP Biology is an introductory college-level biology course. Students cultivate their understanding of biology through inquiry-based investigations as they explore topics like evolution, energetics, information storage and transfer, and system interactions. Students enrolled in AP Biology may take the Advanced Placement exam, which can grant them one semester of science credit at many major universities. Only students writing the AP exam will receive the AP Biology designation in addition to Anatomy and Physiology 12 on their transcript.

AP/CHEMISTRY 12

Students taking Chemistry 12 should have a good understanding of Chemistry 11 concepts. Mathematical competence and the ability to reason logically are both essential for problem solving in this course. Chemistry 12 continues to build on the competencies developed in Chemistry 11 and applies them to the following topics: Reaction mechanisms, equilibriums, solubility, acids and bases, and redox reactions. In each of these five topics, lab skills and problem-solving abilities will be refined.

*AP Chemistry course provides students with a college-level foundation to support future advanced coursework in chemistry. Students cultivate their understanding of chemistry through inquiry-based investigations, as they explore content such as: atomic structure, intermolecular forces and bonding, chemical reactions, kinetics, thermodynamics, and equilibrium. Students enrolled in AP Chemistry may take the Advanced Placement exam, which can grant them one semester of science credit at many major universities. Only students writing the Advanced Placement exam will receive the AP Physics designation in addition to Chemistry 12 on their transcript.

AP/PHYSICS 12

Physics 12 is the study of classical mechanics and electromagnetism and is designed to help students develop analytical and problem-solving skills. It provides opportunities for students to understand and apply the principles and concepts of physics to practical situations.

The Physics 12 curriculum explores topics such as: vector kinematics in two dimensions, dynamics, work, energy and power, momentum, equilibrium, circular motion, gravitation, electrostatics, electric circuits and electromagnetism.

*AP Physics is an algebra-based, introductory college-level physics course. Students cultivate their understanding of physics through classroom study, in-class activity, and hands-on, inquiry-based laboratory work as they explore concepts like systems, fields, force interactions, change, conservation, and waves.

Students enrolled in AP Physics may take the Advanced Placement exam, which can grant them one semester of science credit at many major universities. Only students writing the Advanced Placement exam will receive the AP Physics designation in addition to Physics 12 on their transcript.

Recommended: Ability in mathematics especially a foundation in algebraic manipulation is an asset.