SCIENCE

Course name: **Living Environment: Biology**
Biology Honors
Credit: **1**

The program of studies is outlined in the New York State Regents Core Guide for Biology. Major topics include: scientific attitudes and methods of experimental techniques, living and non-living things, the organization of living things, animal and plant physiology, reproduction, genetics, the chemistry of living things, comparative anatomy, and ecological relationships. Students will learn to draw conclusions from inquiry-based laboratory experience, and will also grow to appreciate the environment from direct study and research. It should be noted that students must successfully complete a minimum of 1200 minutes of laboratory activities, with satisfactory reports submitted, in order to meet the requirement for the Regents examination. At the conclusion of the course, the students will be required to take the New York State Regents examination in Biology.

The Honors class follows the same syllabus as the Regents-level class but with greater breadth of coverage. There is a greater emphasis on student demonstration of the depth of their knowledge.

Course name: **Advanced Placement Biology**
Credit: **1**
Grade: **11-12**
Prerequisite: **Biology Honors/Chemistry Honors or placement through the Honors Matrix**
Physics Honors (prerequisite or co-requisite)

This course is the equivalent of a college biology course. Laboratory work is extensive and students utilize the techniques used at the college level. Primary emphasis is on developing an understanding of concepts. Topics include cellular biology, biochemistry, genetics, and ecology. **Students enrolled in this course must take the Advanced Placement Biology examination in May.**

Course name: **Chemistry**
Chemistry Honors
Credit: **1**
Grade: **10-11**

The program of studies is outlined in the New York State Regents Core Guide for Chemistry. Major topics include: atomic structure, the Periodic Table, chemical bonding, stoichiometry, physical and chemical properties, gas laws, acids and bases, chemical kinetics, electrochemistry, organic chemistry, and nuclear chemistry. Through the lectures and hands-on laboratory experiments, students will learn to use the principles of chemistry to think more intelligently about current issues on science and technology. The program also includes a variety of inquiry-based activities to develop and enhance the students' critical thinking skills. For successful completion of the course, students must accomplish stated learning objectives, complete approved laboratory assignments and take the Regents examination which serves as the final examination for the course. It should be noted that students must successfully complete a minimum of 1,200 minutes of laboratory activities with satisfactory reports submitted, in order to meet the requirement for the Regents examination.

The Honors class follows the same syllabus as the Regents-level course but with greater breadth of coverage. There is a greater emphasis on student demonstration of the depth of their knowledge. Students are strongly encouraged to take the SAT II examination in May.

Course name: **General Chemistry**
Credit: **1**
Grade: **10-11**

General Chemistry generally follows the Regents-level Chemistry syllabus. Students do not take a Regents examination at the end of the course.

Course name: **Advanced Placement Chemistry**
Credit: **1**
Prerequisite: **Chemistry Honors & Physics Honors; Chemistry & Physics Honors and permission of instructor**

This is the equivalent of a college-level chemistry course. This course includes both lecture and extensive laboratory work. Topics include structure of matter, kinetic theory of gases, chemical equilibria, chemical kinetics, and the basic concepts of thermodynamics. **Students enrolled in AP Chemistry must take the AP examination in May.**

Course name: **Astronomy**
Credit: **1**
Grade: **10-12**

This course is designed to introduce students to the study of astronomy. Students will study the structure of our solar system. Topics will include star classification, constellations and galaxies. Students do not take a Regents exam at the end of the course.

Course name: **Earth Science**
Credit: **1**
Grade: **10-12**

Earth Science will follow the New York State Core Guide with strong emphasis upon conceptual understanding of terrestrial systems and mathematical models. The course is divided into three content areas: earth materials and processes, dynamics of the atmosphere, and planet Earth in the universe. These topics will be conveyed through laboratory experiences, student activities, lecture demonstrations, and audio-visual presentations. The syllabus encourages a student-centered problem solving approach to earth science. Throughout the course of the year, students will grow to understand their dependence upon the earth, its finite resources and limited ability to recover from abuse. It should be noted that students must successfully complete a minimum of 1,200 minutes of laboratory activities with satisfactory reports submitted, in order to meet the requirement for the State Regents examination. At the conclusion of the course, the students will be required to take the New York State Regents examination in Earth Science.

Course name: **Physics Honors**
Credit: **1**
Grade: **11-12**
Prerequisite: **Chemistry R or H**

The program of studies is outlined in the New York State Regents Core Guide for Physics. This is a rigorous, mathematically oriented, laboratory science course designed for students who are interested in careers in science, engineering, and computers. Major topics include: mechanics, work and energy, electricity and magnetism, wave phenomena, and modern physics. This course will contribute to the development of the students' ability to think critically through classroom lectures, hands-on and inquiry-based laboratory experiments, and student research. For successful completion of the course, students must accomplish stated learning objectives, complete approved laboratory assignments and take the Regents examination which serves as the final examination for the course. It should be noted that students must successfully complete a minimum of 1,200 minutes of laboratory activities with satisfactory reports submitted, in order to meet the requirement for the Regents examination.

Course name: **Advanced Placement Physics**
Credit: **1**
Grade: **11,12**
Prerequisite: **Biology and Chemistry Honors**

This course is equivalent to a college physics course. This course provides instruction in Newtonian mechanics, fluid mechanics and thermal physics, electivity and magnetism, waves and optics, and atomic and nuclear physics. Juniors enrolled in the course must take the Physics Regents in June. **Students enrolled in the course must take the Physics B Advanced Placement examination in May.**

Course name: **Criminalistics: An Introduction to Forensic Science**
Credit: **1**
Grade: **10-12**
Prerequisite: **Successful completion of Biology and Chemistry**

This full-year course will challenge students to problem solve criminal cases using background knowledge in physical and life sciences, while utilizing new knowledge in forensic science and law enforcement. Major topics include: fingerprinting, DNA analysis, blood analysis, soil analysis, ballistics, fiber analysis, crime scene search methods, and causes of death. Student knowledge will also be enriched by field trip experiences and guest speakers.