

## GRADUATION REQUIREMENTS FOR SCIENCE

Students are required to pass three courses in science, from two areas, one from the Living Environment and one from the Physical setting, and pass one Regents Examination for a Regents Diploma. The Advanced Regents Diploma requires that students pass two Regents exams, one from each area.

Currently a Regents exam is given at the end of every Regents science course (Earth Science, Biology, Chemistry, Physics). This serves as the final examination in each course.

In Earth Science & Biology we offer two levels of Regents science. The S level is more supportive, teaching the material necessary to pass the Regents exam. The R level is more in depth, teaching material to achieve mastery of the subject. Speak with your school counselor to help determine the level most appropriate for you. In Chemistry, a general level is offered for the third year of science that does not require a Regents examination.

**NOTE:** For all Regents courses, a student must satisfactorily complete all laboratories or their equivalent in order to be eligible to take the Regents examination for the course. If a student does not meet this requirement, they will not be able to sit for the exam and will receive a 0 as a final examination grade.

**Students accelerate in science by accelerating in math and:**

**Taking Regents Earth Science in the eighth grade, with math/science teacher recommendation.**

**Double-up taking Biology and Chemistry in tenth grade.**

**Taking Earth Science in ninth grade, Chemistry-R in tenth, Physics in eleventh, and AP Biology in twelfth. Students who pursue this option would also take the Biology Regents exam during twelfth grade.**

**Acceleration in Science is also open to regular math students by recommendation of Math/Science teachers and guidance counselor with approval of Department Chairperson.**

### SCIENCE DEPARTMENT POLICY OF TAKING REGENTS PHYSICS AS A PREREQUISITE TO TAKING ADVANCED PLACEMENT SCIENCE COURSES:

The science department strongly feels that students must have taken or be concurrently taking Regents Physics in order to take or be enrolled in any Advanced Placement Science. This is our science department policy. The department, along with the AP College Board feels that a solid foundation in all four core sciences is important for success in college level science. Students and parents should any direct questions to the science department and its chairperson.

## **EARTH SCIENCE- REGENTS**

### **(Physical Setting)**

Grades: 9 -12 (Grade 8 – by recommendation)

Prerequisite: None

Credit:

1

This course is an in-depth study of the earth including topics such as: the earth in relation to the universe; galaxy and solar system; observation of the changing environment; energy in earth processes particularly related to weather, climate and oceanic dynamics, geologic processes involved on and within the earth, interpretation of the earth's history and development, minerals and rocks. Separate lab periods are required.

## **BIOLOGY - REGENTS**

### **(Living Environment)**

Grades: 9 -12 (Grade 9 – by recommendation)

Prerequisite: Math Course I, Earth Science or Teacher Recommendation

Credit: 1

Regents Biology is a comprehensive course of the biological sciences. Emphasis is placed on major concepts in the following areas, with evolution as the connecting thread for the course: biochemistry, cytology, human physiology, reproduction, genetics, ecology and human impact on ecosystems. Separate lab periods are required.

## **CHEMISTRY - REGENTS**

### **(Physical Setting)**

Grades: 10-12

Prerequisite: Earth Science, Biology, Math Course II, or teacher recommendation

Credit:

1

This is a survey course of topics in chemistry including atomic structure, bonding, kinetics, acids and bases, redox reactions and organic chemistry. Chemistry is a necessary course for students planning to pursue careers in medicine, engineering and technology. Separate lab periods are required.

## **CHEMISTRY IN THE COMMUNITY**

### **(Physical Setting)**

Grades: 11-12

Prerequisite: Earth Sci. & Biology

Credit: 1

This course is designed as a non-Regents course for juniors or seniors needing to obtain one credit of a third science in order to meet the graduation requirement of three science courses. This course focuses on the application of chemical principles and concepts interwoven into several themes that have real-world connections. Some major themes include: water-exploring solutions, structure of metals and nonmetals, petrochemistry, food chemistry, the atmosphere, stomic structure, nuclear chemistry, and industrial chemistry. The course is lab and activity based. Labs are incorporated into class time. There is no separate lab period.

## **PHYSICS - REGENTS**

### **(Physical Setting)**

Grades: 11-12

Prerequisites: Earth Science, Biology, Chemistry, Math Course I, II, III (Algebra, Geometry, and Algebra II. Algebra II may be taken concurrently.)

Credit: 1

Students explore the natural laws which govern our universe, ranging from the subatomic to the intergalactic scale. Fundamental principles of physics including Newtonian mechanics, energy, electricity and magnetism, waves, sound, light, and modern physics will be examined. Emphasis is placed on quantitative problem solving using algebraic and trigonometric means.

This course is strongly recommended for college-bound students pursuing math, science, engineering, or a related technical field, and others seeking the challenge of Regents-level physics. A separate lab class is required.

### **ADVANCED PLACEMENT PHYSICS B**

**(Physical Setting)**

**Grade: 12**

**Prerequisites: Regents Physics, Math Course III (Algebra II), Precalculus (may be taken concurrently)**

Credit: 1

This course revisits much of the material that students were introduced to in Regents Physics. Such topics include: Newtonian Mechanics, Energy, Wave Theory, Electromagnetism and Modern Physics. The curriculum adds an introduction to Rotational Kinematics, Fluid Dynamics, Thermodynamics and Optics. Mathematical analysis remains algebraic but with increased pace and rigor. Regular connections are made to calculus-based analysis. Students are prepared for the AP Physics B Exam that is administered in May by the College Board.

### **METEOROLOGY-UNIV**

Grades: 10-12

Prerequisite: Earth Science

Credit: .5

This course is taught locally and is part of SUNY Albany's University in the High School Program. The class introduces students to the concepts and principles of meteorology using real-time data from the Internet. Topics that will be covered include satellite analysis, cyclones, weather balloon data, severe weather and forecasting. The course will also contain a variety of projects such as WEB page analysis and a multimedia presentation covering such topics as hurricanes, tornados, lightening, blizzards, El Nino and Global Warming.

### **FORENSICS & CRIMINAL JUSTICE**

Grades: 11-12

Prerequisite: A senior elective for students who have completed the three year science requirement.

Credit: .25 Science & .25 Social Studies

This interdisciplinary course in forensic science offers a broad scientific experience as well as a hands-on opportunity to explore the intricacies of how criminal investigation relies on forensic science.

### **ADVANCED PLACEMENT BIOLOGY/UNIV**

Grades: 11-12

Prerequisite: Regents Biology, Chemistry & Math Course IIR. Also Physics concurrently or Counselor/Teacher recommendation

Credit: 1

Advanced Placement Biology provides students with the opportunity to pursue an in-depth study of Biology through a laboratory oriented approach. The course of study involves major amounts of time spent in the areas of cytology, biochemistry, molecular genetics, and selected physiological systems. Evolution at different levels of organization is the unifying concept. Emphasis is placed on lab activities, study of the text, reference books, and selected articles from a variety of journals. Students should expect to devote a moderate amount of time beyond the scheduled class

periods in completing labs and independent projects. A fee is required for the AP exam given in May. Separate lab periods are required. Successful scores can be submitted to college for possible credit and/or advanced placement.

### **ADVANCED PLACEMENT CHEMISTRY**

**Grades: 11-12**

Prerequisite: Regents Chemistry & Math Course III. Also Physics concurrently or Counselor/Teacher recommendation

Credit: 1

This course is designed for students who are planning to pursue a science related career. Students are required to take the AP exam in May and may also apply for University in the High School credit. This course focuses on topics covered in a first and second semester college chemistry course. Topics include atomic structure, periodic table/trends, gas laws, mathematical chemistry relationships, thermo-chemistry, covalent bonding/geometry, rates of reaction, acids/bases, equilibrium, electrochemistry, nuclear chemistry, and some basic organic chemistry. Emphasis is placed on reaction writing, predicting chemical products and qualitative analysis of chemical unknowns. Completion of a weekly problem set and weekly quiz is part of the course. Labs will be scheduled for every other day.

### **ENVIRONMENTAL SCIENCE/ UNIV**

Grade 12 only

Prerequisite: 2 years of Lab Science, including Chemistry

Credit: 1

*Appropriate for students planning to pursue this major at the two or four year college level. This course will meet the graduation requirement for a third science course and could provide university credit.*

Environmental Science is an interdisciplinary course designed to provide students with scientific principles, concepts, and methodology; to understand interrelationships of the natural world; to identify and analyze environmental problems both natural and man-made; to evaluate the relative risks associated with these problems; and to examine alternative solutions for resolving and/or preventing them. Specific topics include earth systems, population dynamics, renewable and non-renewable resources, environmental quality, global changes, and the role of the environment and society in decision making for the future. The interdisciplinary nature of the course combines aspects of earth science, biology, chemistry, math, technology, health, global studies, government, and economics.