



2018/
2018



SCIENCE

The Science Department is designed to reach the student's individual needs in the study of science through inquiry and laboratory procedures. The general fields that may be pursued are Living Environment, Chemistry, Earth Science, and Physics. Classes are offered at various proficiency levels while still following the New York State Regents curriculum for their respective concentrations as well as NYS Standards for Science. Students participate in lecture and lab which are both required in order to take a NYS Regents Examination in June. While computer programs, research conducted in libraries or on the Internet, and worksheets may be a part of the laboratory experience, they will not comprise the sole experience ("hands-on").

STANDARD 1

Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

STANDARD 2

Students will access, generate, process, and transfer information using appropriate technologies.

STANDARD 3

Students will understand the concepts of and become proficient with the skills of mathematics; communicate and reason mathematically; become problem solvers by using appropriate tools and strategies; through the integrated study of number sense and operations, algebra, geometry, measurement, and statistics and probability.

STANDARD 4

Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.

STANDARD 5

Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.

STANDARD 6

Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

ADVANCED PLACEMENT

For those considering Advanced Placement Courses in Environmental Science and Biology, the following points are important:

- Carefully read the course description. important for student success.
- Students who qualify according to the course descriptions may seek admission by teacher recommendation, department approval, and discussion of the expectations of the course with the Advanced Placement instructor.
- In order to complete the curriculum in a timely manner, students are required to complete summer reading assignments.
- High motivation to take an Advanced Placement course is extremely important for student success.
- Because of the nature of Advanced Placement courses, the class size will be limited to 18 students.
- Other factors used in consideration of the applicants include attendance records, SAT or PSAT scores, and writing ability.
- A student who applies for and is accepted into the Advanced Placement course is expected to prepare for, pay for, and take the Advanced Placement exam in May.



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Living Environment Honors

GRADE 9 | FULL YEAR

This course follows the New York State Regents curriculum for Biology: The Living Environment. Six important themes will be covered. They include: (1) Evolution, (2) Energy, Matter and Organization, (3) Maintaining a Dynamic Equilibrium, (4) Reproduction, Growth and Development, (5) Genetics and Molecular Biology and (6) The Interaction and Interdependence of Organisms. Students participate in lecture and lab. Both are required to take NYS Regents Exam in June. In addition, the course helps students develop skills needed to answer content based questions dealing with all major biological topics, confidence and proficiency when doing lab analysis, and an interest in advanced and current issues in biology.

PREREQUISITE: TACHS EXAM AND 8TH GRADE SCORES.

Living Environment Regents

GRADE 9 | FULL YEAR

This course follows the New York State Regents curriculum for Biology: The Living Environment. Six important themes will be covered. They include: (1) Evolution, (2) Energy, Matter and Organization, (3) Maintaining a Dynamic Equilibrium, (4) Reproduction, Growth and Development, (5) Genetics and Molecular Biology and (6) The Interaction and Interdependence of Organisms. Students participate in lecture and lab. Both are required to take NYS Regents Exam in June.

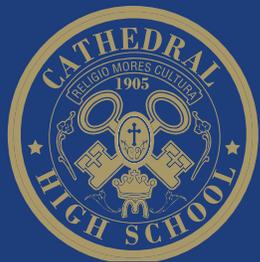
PREREQUISITE: NONE

Earth Science Regents

GRADE 10 | FULL YEAR

Regents level Earth Science is a laboratory-oriented course, which emphasizes the analysis of the geophysical processes that mold our earth. Some processes that will be studied include plate tectonics, geology, and meteorology. Students enrolled in Regents level Earth Science will be expected to hypothesize, interpret, analyze, evaluate data, and apply their scientific knowledge to real world situations. Students are required to participate in laboratory activities, complete lab reports, and take the NYS Earth Science Regents Exam.

PRE-REQUISITE: LIVING ENVIRONMENT



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Chemistry Honors

GRADE 10 | FULL YEAR

This course follows the New York State Regents curriculum for Chemistry-The Physical Setting. Topics are covered in depth and include matter and energy, atomic structure, chemical bonding, the periodic table, mathematics of chemistry, kinetics and equilibrium, acids and bases, redox and electrochemistry, organic and nuclear chemistry. This course includes both lecture and laboratory oriented work. The students are required to take the NYS Regents Examination in Chemistry in June.

PREREQUISITE: REGENTS LIVING ENVIRONMENT WITH AN 95% OR ABOVE

Chemistry Regents

GRADE 11 | FULL YEAR

This course follows the New York State Regents curriculum for Chemistry-The Physical Setting. Topics are covered in depth and include matter and energy, atomic structure, chemical bonding, the periodic table, mathematics of chemistry, kinetics and equilibrium, acids and bases, redox and electrochemistry, and organic and nuclear chemistry. This course includes both lecture and laboratory oriented work. The students may take the NYS Regents Examination in Chemistry in June.

PREREQUISITE: REGENTS EARTH SCIENCE

Physics Regents

GRADES 11, 12 | FULL YEAR

This course follows the New York State Regents curriculum for Physics-The Physical Setting. The main areas covered include mechanics, energy, electricity and magnetism, wave phenomena, motion, forces, heat, light, sound, nuclear physics and relativity. Lecture, laboratory experiments, problem-solving, and record keeping are an integral part to this course. Upon completion, students are required to take the NYS Regents examination in June.

**PREREQUISITE: REGENTS LIVING ENVIRONMENT 95% OR ABOVE;
REGENTS CHEMISTRY 80% OR ABOVE**



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Forensic Science

GRADE 12 | FULL YEAR

This course provides an introduction to forensic science with a combination of lectures and hands-on lab investigation that will allow students to explore the many disciplines of scientific study (biology/anatomy, chemistry, and physics) applied to solving crimes. By creating a foundation for understanding many of the concepts and techniques on which forensic science is built, (such as those associated with crimes scene processing, physical evidence, microscopy, fingerprints, firearms and DNA), students will be asked to apply critical thinking skills to interpret evidence from relevant, real-life cases. The learning objectives of this course are (1) develop an understanding and appreciation for the scope of forensic science and (2) develop an understanding of the scientific method in the context of the law.

PREREQUISITE: NONE



Advanced Placement Environmental Science

GRADE 12 | FULL YEAR

The AP Environmental Science course is designed to be the equivalent of a one semester, introductory college course in environmental science. Unlike most other introductory-level college science courses, environmental science is offered from a wide variety of departments, including geology, biology, environmental studies, environmental science, chemistry, and geography.

AP Environmental Science course has been developed with the intent to enable students to undertake, as first-year college students, a more advanced study of topics in environmental science or, alternatively, to fulfill a basic requirement for a laboratory science and thus free time for taking other courses. The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, 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 alternative solutions for resolving or preventing them. Environmental science is interdisciplinary; it embraces a wide variety of topics from different areas of study. Yet there are several major unifying constructs, or themes, that cut across the many topics included in the study of environmental science. The following themes provide a foundation for the structure of the AP Environmental Science course.

PREREQUISITE: REGENTS LIVING ENVIRONMENT 80% OR ABOVE REGENTS CHEMISTRY 80% OR ABOVE

FEE: APPROXIMATELY \$92 FOR TESTING (\$250 PER SEMESTER FOR ST JOHN'S)



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Advanced Placement Biology

GRADES 11, 12 | FULL YEAR

The Advanced Placement Program is a cooperative education endeavor with the College Entrance Examination Board. A course in Advanced Placement Biology is designed to provide able and highly motivated students with an opportunity to pursue college-level biological studies while still in high school. Candidates for this course must have successfully completed courses in Regents Living Environment, Chemistry, and Physics. There is a strong emphasis on laboratory work both structured and of an original nature, designed by the students themselves. Topics include molecules, cells, genetics, evolution, organisms, populations, and ecology. Laboratory investigations include diffusion, osmosis, enzymes, plant pigments, photosynthesis, physiology, genetics, cell structure, respiration, reproduction, and bacteriology. In addition, there will be extensive reading assignments to enhance students' learning.

Many colleges will grant credit and appropriate placement to students who do well in the examination. This special examination will be given in May, and a fee is required by the College Entrance Board. This course is associated with St John's University's College Advantage Program. This program provides qualified students a concurrent enrollment in their high school and college credit-bearing courses for the University. This program is offered to seniors during the academic year. Participation in the College Advantage Program is OPTIONAL

PREREQUISITE: REGENTS GRADES OF 85% OR ABOVE IN BIOLOGY AND CHEMISTRY.

FEE: APPROXIMATELY \$92 FOR TESTING (\$250 PER SEMESTER FOR ST JOHN'S)



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