



SCIENCE

The Science Department is strongly encouraging more students to work toward earning an Advanced Regents Diploma. Several may be offered online, with lab scheduled during the day. Participation in online classes requires approval of Department Coordinator.

SCIENCE COURSES - GRADE 9

COURSE	PREREQUISITE
Biology R	None
Physics	Algebra Regents exam score of 80 or Better. Recommendation of Science and Algebra teachers.
Earth Science R	Passing grade on the Living Environment (Biology) Regents exam of a 65 or Better.

SAMPLE PATHWAYS FOR ALL STUDENTS

9TH	10TH	11TH	12TH
BIOLOGY	EARTH SCIENCE	CHEMISTRY/PHYSICS/ SCIENCE ELECTIVE	SCIENCE ELECTIVE
BIOLOGY	CHEMISTRY PRE-IB	PHYSICS OR BIOLOGY UHS/IB 1	BIOLOGY UHS/IB 1 OR 2
EARTH SCIENCE (FOR STUDENTS WHO TOOK BIO IN 8TH GRADE)	CHEMISTRY	PHYSICS, BIOLOGY UHS/IB 1	BIOLOGY UHS/IB 1 OR 2
PHYSICS (FOR STUDENTS WHO TOOK ALGEBRA IN 8TH GRADE)	CHEMISTRY	BIOLOGY UHS/IB 1	BIOLOGY UHS/IB 2

BIOLOGY

(1 CREDIT)

Open to grade 9

Living Environment Regents course is built on the knowledge, understanding, and ability to do science that students have acquired in their earlier grades. Instruction is focused on understanding important relationships, processes, mechanisms, and applications of concepts with less emphasis on the memorization of specialized terminology and technical details. The assessments test students' ability to explain, analyze, and interpret biological processes and phenomena

more than their ability to recall specific facts. The course is expected to prepare students to explain the most important ideas about our living environment. It is accomplished through lectures, large and small group discussions, text readings and lab activities. Laboratory experiences provide the opportunity for students to develop the scientific inquiry techniques, the use of information systems, the interconnectedness of content and skills and the problem-solving approaches (The Living Environment Core Curriculum) A lab class is a required component

of this class. Successful completion of the lab portion is required to sit for the Living Environment: Biology Regents exam

BIOLOGY: H

(1 CREDIT)

This course is an advanced version of our current Biology R course. Instruction focuses on the development of the critical thinking and analytical skills that will prepare students for coursework in the International Baccalaureate Program. The course will also include an extensive research component that

will familiarize students with the type of research that will be carried out in the IB program. A lab class is a required component of the course.

Students sit for the Regents Living Environment exam in June.

BIOLOGY UHS/IB (HL/YEAR 1)

4 UHS CREDITS, SCCC (BIO 141)
(1 CREDIT)

Prerequisites: Successful completion of a Regents level Science exam (65 or higher) and minimum 85% attendance rate in the sophomore year)

IB/UHS Biology is a rigorous, Group IV higher level course that



is taught over two years. During the first year, students develop a broad understanding of the field of biology, explore current topics relating to the field, and participate in research-related activities. A lab class that meets separately from the regular class is a required component of the course. This course is available to both Diploma Program and Certificate students.

BIOLOGY UHS/IB (HL/YEAR 2)

4 UHS CREDITS, SCCC (BIO 142) (1 CREDIT)

Prerequisites: Satisfactory progress on IB Biology Internal Assessment at time of scheduling (verified by Year 1 instructors.)

In Year 2 Biology (Group IV subject) students perform further study in a broad range of topics relating to Biology. The IB Biology Exam is administered in May, and this course fulfills the Experimental Sciences requirement for the full IB Diploma. A lab class that meets separately from the regular class is a required component of the course. This course is available to both Diploma Program and Certificate students.

CHEMISTRY

REGENTS (1 CREDIT)

Open to grades 10, 11, and 12. **Prerequisite:** Successful completion of Regents Biology or Regents Earth Science or Algebra.

Regents Chemistry presents a modern view of chemistry suitable for pupils with a wide range of skills

and abilities. Topics include; matter and energy, atomic structure, bonding, periodic table, mathematics of chemistry, kinetics and equilibrium, acid-base theory, and organic chemistry. A lab class is a required component of the course. A minimum of one hour of homework is expected each day.

CHEMISTRY HONORS

(1 CREDIT)

Open to grade 10 and above. **Prerequisite:** successful completion of Honors Biology, Physics, 80 or above on Living Environment Regents, or the recommendation of the Science Coordinator.

This course will be an extension of our current Regents Chemistry course. It will prepare students for the science component of the International Baccalaureate Program, in addition to preparing for the NYS Regents exam in Chemistry. The course will also include an introduction to laboratory work that will familiarize students with the type of laboratory work that will be carried out in the IB program. A lab class that meets separately from the regular class is a required component of the course.

CHEMISTRY IB (SL)

4 UHS CREDITS, UALBANY (1 CREDIT)

Open to grades 11 and 12. **Prerequisite:** successful completion of Living Environment, Regents Chemistry, and two years of Regents-level math.

IB Chemistry provides students with a broad

overview of stoichiometry, atomic theory, periodicity, bonding, states of matter, energetics, kinetics, acids and bases, oxidation-reduction, environmental chemistry, and chemical industries. A lab class is a required component of the course. The IB Chemistry exam is administered in May, which fulfills the science requirement for the IB Diploma.

EARTH SCIENCE

REGENTS (1 CREDIT)

Open to grades 10, 11 and 12. **Prerequisite:** Passing grade on the Living Environment Regents Exam. Students must have passed Algebra, or be in Geometry and passed Biology.

Also open to 9th graders who passed the Living Environment Regents exam in 8th grade.

Regents Earth Science considers the following topics: the earth in relation to the universe, galaxy and solar system, energy in earth processes, surface heating, weather, oceanic dynamics, forces which mold and modify surface features, erosion, volcanoes, earthquakes and deposition, and the identification of rocks and minerals. A lab class is a required component of the course. Students must have completed or currently be enrolled in Algebra and passed Biology.

ENVIRONMENTAL SCIENCE

(1 CREDIT)

Open to grades 11 and 12. **Prerequisite:** Received credit for one year of Living Environment and one year of Physical Setting and passed one regents exam in either course.

Environmental Science is designed to be an introductory course to environmental studies. The goals of this course are to provide students with the scientific principles, concepts, and methodologies required to:

1. Understand the interrelationships of the natural world;
2. To identify and analyze environmental problems both natural and man-made; and
3. To evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or preventing them.

Topics to be covered include interdependence of earth systems, human population dynamics, communities and ecosystems, natural resources, environmental quality, global changes, environmental management, pollution, sustainability and personal responsibility.



FIRST AID AND SPORTS MEDICINE

(1 CREDIT)

Open to grades 11 and 12. **Prerequisite:** Received credit for one year of Living Environment and one year of Physical Setting and passed one regents exam in either course.

This semester course is designed to give students a solid background in First Aid. It will include prevention and care of athletic injuries and current topics in sports medicine. All students may have the opportunity to be certified in First Aid and CPR upon successful completion of the class. This class is open to all students who have completed the Living Environment course.

FORENSIC SCIENCE

(1 CREDIT)

Open to grades 11 and 12. **Prerequisite:** Successful completion of a Regents lab science.

Forensic science is the application of science to solving crimes in the criminal justice system. This course will investigate Criminalistics, the application of science in the services of a crime laboratory. Students will become familiar with biological evidence such as DNA fingerprinting, hair analysis, drug analysis and identification. Exposure to career pathways in the criminal justice system and hands-on learning are integrated into the study of solving crimes. Labs will be incorporated into the class to facilitate learning.

PRACTICAL PHYSICS: ENGINEERING

REGENTS (1 CREDIT)

Open to grades 11 and 12.

Practical Physics:Engineering is a full-year course designed to introduce students to the world of technology and engineering, as a first step in becoming technologically literate citizens. Additionally, the course will help high school students answer the question: "Why should I study math, science and engineering if I don't plan on a technical career?" Through this course's practical real-world connections, students have an opportunity to see how science, mathematics, and engineering are part of their every day world, and why it is important for every citizen to be technologically and scientifically literate. Especially suited for juniors and seniors who have not passed the Algebra Regents yet.

PHYSICS

REGENTS (1 CREDIT)

Open to grades 9 - 12. 9th grade **Prerequisite:** Algebra Regents exam score of 80 or Better. Recommendation of Science and Algebra teachers.

10th–12th grade **Prerequisite:** successful completion of the algebra regents.

Topics include: kinematics, energy, waves, electricity and magnetism, and models of the atom. A separate laboratory is scheduled for this course and state mandates are followed. Students are expected to complete homework daily.

PHYSICS IB (SL)

8 UHS CREDITS, UALBANY (APHY 105, 106, 108, 109) (1 CREDIT)

Open to grades 11 and 12. **Prerequisites:** Successful completion of two Regents level Science exams and the Geometry Regents exam (65 or higher), minimum 85% attendance rate in the previous year and must fit the IB Learner Profile with the motivation and desire to learn. Students who wish to appeal the prerequisite requirements may do so using the IB Program Appeal Process.

This IB course will be an extension of our current Regents Physics course. Topics include: uncertainties of measurement, mechanics, thermodynamics, wave phenomena, electric current, nuclear and atomic structure, field forces, energy, power, climate change and astrophysics. It is intended for students who plan on further study in science. A lab class that meets separately from the regular class is a required component of the course. Students will be prepared for the Regents Physics exam, and the IB Standard Level exam that is administered in May, which fulfills the IB science requirement for the IB Diploma.