
SCIENCE

Mr. Arthur N. Registre, Director of Science – (516)-560-8857

The science program at Uniondale High School is geared to prepare each Uniondale graduate to understand the science concepts behind the advances of the 21st century. We want our students to experience science and see how it applies in everyday life. Our students will have the opportunity for research, projects and many exciting competitions such as: Science Olympiad, *Envirothon*, *Toshiba*, *ExploraVision*, Science Congress, and the Science and Engineering Fairs. For students planning careers in science, technology, medicine, engineering and/or scientific research, the science program offers challenging courses to develop scientific habits of mind. The chart below lists the various courses by grade level. The Science Department continues to encourage all students to earn four or more units in science as the best preparation for careers in the 21st century. To earn a Regents or Advanced Regents diploma, students are required to earn three units in science. Two of these courses must be based on NYS Regents core curricula, one from the Living Environment (Regents Level or Honors) and one from the Physical Setting (Earth Science, Chemistry, Physics or Forensic Chemistry). The third unit can be either a Life Science or Physical Science course, including Regents Chemistry, Regents Physics or science electives, MST, AP/ College courses and Science Research. All students must pass one Regents Science Examination to earn one Regents credit to meet the science requirement for a Regents Diploma. Passing The Living Environment Regents and one Physical Setting Regents will meet the science requirement for an Advanced Regents Diploma.

LIVING ENVIRONMENT REGENTS

Course No: **2009**

Credit: 1.0

Examination: Living Environment Regents

Prerequisite: None

This biology course is aligned to the NYS Living Environment Core Curriculum. This contemporary biology course emphasizes current topics in molecular genetics and ecological relationships, while providing students with a foundation in scientific method, biological concepts, skills and problem solving. Hands-on laboratory work is an integral part of the curriculum. Students must meet the NYS laboratory requirement to be eligible to sit for the Regents examination. This requirement includes successful completion of 1200 lab minutes, plus the four NYS mandated laboratories.

LIVING ENVIRONMENT REGENTS (EL)

Course No. 2013

Credit: 1.0

Grades Offered: All

Examination: Regents

Pre-Requisite: LEP/ELL “EMERGING or TRANSITIONING” designation on NYSITELL or NYSESLAT

This class, taught by a licensed science teacher who holds a bilingual extension or who has been trained in the Sheltered Instruction Observation Protocol (SIOP), is especially designed for limited English proficient/English language learner (LEP/ELL) at the “Beginning” or “Intermediate” level of English proficiency. It is geared at preparing ELLs to successfully challenge the “Living Environment” Regents Examination.

BILINGUAL LIVING ENVIRONMENT

Course No. 1886

Grades Offered: All

Credit: 1.0

Examination: Regents

Pre-Requisite: Spanish fluency; LEP/ELL “ENTERING” or “EMERGING” or “TRANSITIONING” designation on NYSITELL or NYSESLAT

This class, taught by a science teacher who holds a bilingual extension and who is fluent in the LEP/ELL students’ native language, is especially designed for Spanish language dominant limited English proficient/English language learner (LEP/ELL) at the “Beginning” or “Intermediate” level of English proficiency. It is geared at preparing ELLs to successfully challenge the “Living Environment” Regents Examination.

LIVING ENVIRONMENT HONORS

Course No: **2007**

Grades 9-10

Credit: 1.0

Examination: Living Environment Regents

Prerequisite: 85% or better on 8th Grade ILST Exam/Teacher Recommendation.

This biology course is recommended for those students who plan to take Advanced Placement Biology and/or who plan to major in a life science field in college. Students enrolled must be recommended by their eighth grade (or previous) science teacher. This course is aligned to the NYS Living Environment Core Curriculum and is an enriched contemporary biology course. The Living Environment Honors curriculum emphasizes critical thinking, complex biological concepts, laboratory work, and biological investigations. Students must meet the NYS laboratory requirement to be eligible to sit for the Regents examination in Living Environment. This requirement includes successful completion of 1200 state required lab minutes included the four NYS mandated laboratories. Students will also be prepared to take the Subject SAT II exam.

EARTH SCIENCE REGENTS

Course No: **2020F**

Grades 9-12

Credit 1.0

Examination: Earth Science Regents Exam

Prerequisite: Living Environment Regents

This course is aligned to the NYS Physical Setting/Earth Science Core Curriculum. Topics include Earth and celestial phenomena, the origin of the universe and solar system, weather patterns, seasonal changes, plate tectonics, landforms, the rock cycle, the chemical and physical properties of minerals, weathering and erosion and other related topics. Hands-on laboratory work is an integral part of the curriculum. Students must meet the NYS laboratory requirement to be eligible to sit for the Regents examination, which includes a Laboratory Performance Test that will be administered before the written portion of the Regents examination in Physical Setting/Earth Science.

CHEMISTRY REGENTS

Course No: **1960**

Grades 11-12

Credit 1.0

Examination: Chemistry Regents

Prerequisite: Successfully passed Living Environment Regents Exam and Algebra 1 Regents Exam

This course is aligned to the NYS Physical Setting/Chemistry Core Curriculum. Chemistry is the study of matter and its changes. The atomic model is approached through studies of the solid, liquid and gaseous states by means of observations, both qualitatively and quantitatively. Included is the study of chemical and nuclear reactions, acid and base composition of solutions, chemical equilibria, electrochemical energy, and organic chemistry. This course is essential for students interested in science and who plan further scientific study in college leading to careers in biology, chemistry, engineering, mathematics, medicine, nursing, physics, and science teaching. Hands-on laboratory work is an integral part of the curriculum. Students must meet the NYS laboratory requirement to be eligible to sit for the Regents examination in Physical Setting/ Chemistry.

CHEMISTRY HONORS

Course No: **1950**

Grades 9-12

Credit 1.0

Examination: Chemistry Regents

Prerequisite: Successfully passed Living Environment Regents with 85% or better and successfully pass Algebra 1 Regents with 85% or better.

This course is aligned to the NYS Physical Setting/Chemistry Core Curriculum and incorporates enrichments to prepare students for advanced study in chemistry including emphasis on laboratory work. This course is recommended for students who plan to take AP Chemistry and/or plan medical, scientific or engineering careers. Hands-on laboratory work is an integral part of the curriculum. Students must meet the NYS laboratory requirement to be eligible to sit for the Regents examination in Physical Setting/Chemistry. Students will also be prepared to take the Subject SAT II exam.

PHYSICS REGENTS

Course No: **1940**

Grades 11-12

Credit 1.0

Examination: Physics Regents

Prerequisite: Successfully passed Living Environment Regents, Chemistry Regents, and Geometry Regents

This course is aligned to the NYS Physical Setting/Physics Core Curriculum. This course is recommended for any student intending to major in any field of science or mathematics in college. Physics is essentially the study of energy and explores the following areas: mechanics, simple machines, light, heat, sound, electricity, magnetism, and atomic structure. Hands-on laboratory work is an integral part of the curriculum. Students must meet the NYS laboratory requirement to be eligible to sit for the NYS Regents examination in Physical Setting/Physics.

PHYSICS HONORS

Course No: **1930**

Grades 9-12

Credit 1.0

Examination: Physics Regents

Prerequisite: Successfully passed Living Environment Regents with 85% or better and Chemistry Regents with 85% or better

This course is aligned to the NYS Physical Setting/Physics Core Curriculum. Further, this course is recommended for any students interested in scientific, mathematical and/or engineering careers. This is an enriched physics course that integrates extensive laboratory work with college-level problems and assignments. Hands-on laboratory work is an integral part of the curriculum. Students must meet the NYS laboratory requirement to be eligible to sit for the Regents examination in Physical Setting/Physics. Students will also be prepared to take the Subject SAT II exam.

PHYSICS HONORS - PHYSICS FIRST PROGRAM

Course No: **1930A**

Grade 9

Credit: 1.0

Examination: Physics Regents Exam

Prerequisite: Living Environment Regents scoring an 85% (+), Algebra 1 85% (+)

This course is aligned to the NYS Physical Setting/Physics Core Curriculum. Further, this course is recommended for any students interested in scientific, mathematical and/or engineering careers. This is an enriched physics course that integrates extensive laboratory work with college-level problems and assignments. Hands-on laboratory work is an integral part of the curriculum. Students must meet the NYS laboratory requirement to be eligible to sit for the Regents examination in Physical Setting/Physics. Students will also be prepared to take the Subject SAT II exam.

SCIENCE ELECTIVE COURSE OFFERINGS

Mr. Arthur N. Registre, Director of Science – (516)-560-8857

LIVING ENVIRONMENT ENRICHMENT A AND B

Course No: **2022** Enrichment A, **2023** Enrichment B

Grade 9

Credit: 0.5

Prerequisite: Mandatory enrichment course based on 8th ILST exam results. Unofficial scores to H.S.

Guidance Counselors for scheduling

This course is mandatory for any student who did not pass the New York State 8th Grade ILST exam and who is currently in the 9th grade and enrolled in a Living Environment Regents course. Students will follow the Living Environment Regents course curriculum with an emphasis on Regents examination questions and test taking skills provided in work books. The course also allows students to earn a half credit toward graduation. Course is given every other day on A days or B days. Students will use the Achieve 3000 online teaching website as a tool on their journey to success. Achieve3000® believes that every student — mainstream, English language learners, special needs and gifted alike — can reach higher. That all students have the ability to improve their reading and writing. And that with this ability, they have the means to master the curriculum to meet the standards set by Common Core and to be prepared for college and career.

SCIENCE SEMINAR 1Course No: **1993**

Grades 9-12

Credit: 0.5

Examination: Living Environment Regents – January

Prerequisite: Need to retake Regents exam

This course is offered Semester 1 for any student who did not pass the New York State Regents examination in Living Environment. For a Regents diploma, students must pass one Regents science examination. For the Advanced Regents Diploma, students must pass a New York State Regents science examination in Living Environment and one in Physical Setting. Students will retake the Regents examination in January.

SCIENCE SEMINAR 2Course No: **1994**

Grades 9-12

Credit: 0.5

Examination: Living Environment Regents – June

Prerequisite: Need to retake Regents exam

This course is offered Semester 2 for any student who did not pass the New York State Regents examination in Living Environment. For a Regents diploma, students must pass one Regents science examination. For the Advanced Regents Diploma, students must pass a New York State Regents science examination in Living Environment and one in Physical Setting. Students will retake the Regents examination in June.

SCIENCE PREP (EL)**Course No. 2002**

Grades Offered: 9, 10

Credit 1.0

Examination: Class Exam

Pre-Requisite: ENL/ELL “ENTERING” designation on NYSITELL or NYSESLAT

This class is especially designed for limited English proficient (ENL) newcomer students who need to be brought up to grade level in science. It introduces them to the items, vocabulary and concepts of science they will need to successfully challenge the “Living Environments” and “Earth Science” Curriculums.

EARTH SCIENCE (NON-REGENTS) (EL)**Course No. 1895**

Grades Offered: All

Credit 1.0

Examination: Class Exam

Pre-Requisite: ENL/ELL “EMERGING” or “TRANSITIONING” designation on NYSITELL or NYSESLAT

This class, taught by a licensed science teacher who holds a bilingual extension or who has been trained in the Sheltered Instruction Observation Protocol (SIOP), is especially designed for limited English proficient/English language learner (LEP/ELL) students at the “Beginning” or “Intermediate” level of English proficiency who passed the “Living Environment” Regents.

FORENSIC CHEMISTRY

Course No: **2060**

Grades 11-12

Credit: 1.0

Examination: School Exam

Prerequisite: Successfully passed Living Environment Regent exam or Earth Science Regents exam and currently in 11th grade

This course is a "hands-on" introduction to the contemporary field of Forensic Science. Forensic Chemistry applies concepts of chemistry to the investigation of physical evidence in matters of the law. Laboratory investigation and problem-solving techniques will involve chemistry topics involved in criminalistics (recognition, identification and evaluation of evidence), toxicology (study of physical and chemical agents on living systems), arson, fingerprints, and forgery. Questions will be answered such as: Was the fire in the boy's room of natural causes? Are there detectable traces of gasoline? Is the stain on the suspect's clothes blood? Forensic Chemistry is recommended for students who are interested in careers in medicine, law, environment, police work, or security work. This course meets the Physical Setting lab requirement of the Regents or Advanced Regents Diploma. Pending NCAA Approval.

HUMAN ANATOMY AND PHYSIOLOGY

Course No: **2100/2100A**

Grades 11-12

Credit: 0.5

Examination: School Exam

Prerequisite: Successfully passed Living Environment Regent exam or Earth Science Regents exam and currently in 11th grade

Anatomy and Physiology is the study of the structure (anatomy) of the human body and how it functions (physiology). This course is ideal for students contemplating careers in the medical professions, biological sciences or physical education. The gross anatomy of all the body systems will be examined with emphasis on the muscular and skeletal systems. Functions of all systems will be explored. The course will also include topics in nutrition, weight training, and kinesiology.

HUMAN ANATOMY AND PHYSIOLOGY

Course No: **2100A**

Grades 11-12

Credit: .5

Examination: Class Final

Prerequisite: Successfully passed Living Environment Regent exam or Earth Science Regents exam and currently in 11th grade

Anatomy and Physiology is the study of the structure (anatomy) of the human body and how it functions (physiology). This course is ideal for students contemplating careers in the medical professions, biological sciences or physical education. The gross anatomy of all the body systems will be examined with emphasis on the muscular and skeletal systems. Functions of all systems will be explored. The course will also include topics in nutrition, weight training, and kinesiology.

INTRODUCTION TO GENETICS

Course No: **2075**

Grades 11-12

Credit: 0.5

Examination: Class Final

Prerequisite: Living Environment Regents or Earth Science Regents, currently in 11 or 12 grade

Genetics is the science of heredity. Classical principles of genetics together with the most modern advances in technology are applied to the study of human traits. Some of the topics include how traits are inherited, genetic diseases and their causes, sex determination, birth defects and the future of genetic engineering.

MARINE BIOLOGY AND OCEANOGRAPHY

Course No: **2110**

Grades 11-12

Credit: 1.0

Examination: Class Final

Prerequisite: Successfully passed Living Environment Regent exam or Earth Science Regents exam and currently in 11th grade

This course is designed to introduce students to the study of Marine Science. Emphasis is placed on the marine ecosystems that surround Long Island. Topics include geological, physical, and chemical oceanography, energy flow, evolution of marine plants, aquatic organisms, disruptions and threats to ecosystem survival. Laboratory experiences, demonstrations, and field trips are integral components of this course.

SCIENCE RESEARCH PROGRAM

Course No: **1985**

Grade Offered

Credit 1.0

Examination: Class Final

Prerequisite: One year of a Regents/Honors level laboratory science class AND permission of Instructor (9th graders need permission of Director); up to 4 credits per year will be awarded through SUNY Albany if eligible. Level 1: Grade 9 Level 2: Grades 10-12

This course is designed for students who want to learn about and participate in research in the areas of science, math, computers, engineering, or social science. Students develop research skills leading toward success in competitions. Students learn to design, carry through, and complete original research. The aim of Level 1 is to learn and apply various laboratory techniques to independent research projects and enter local and regional competitions. The goal of the Level 2 sequence is to learn different research methods; locate supporting resources in the library and on-line; and, to write research papers that incorporate statistical analyses. A major objective of this sequence is to develop a project for various local, state, or national science competitions such as the Intel Science Talent Search (seniors), Intel International Science & Engineering, Regional and State Fairs, and/or the Long Island Science Congress. Extended time after school is available in a state-of-the-art research laboratory in the high school.

FORENSIC SCIENCE

Course No: 2072

Grades 11-12

Credit 0.5

Examination: Class Final

Prerequisite: Completion of Living Environment or Earth Science Regents. Currently in 11-12 grade.

This course is a “hands-on” introduction to the contemporary field of Forensic Science. Forensic Science represents an application of the natural sciences (Biology and Chemistry) to the investigation of physical evidence in matters of the law. Laboratory investigation and problem-solving techniques will involve criminalistics (recognition, identification and evaluation of evidence), toxicology (study of physical and chemical agents on living systems), poisoning, arson, fingerprints, and forgery. Questions will be answered such as: Is the signature genuine? Was the ransom note typed on the principal’s typewriter? Was the fire in the boy’s room of natural causes? Are there detectable traces of gasoline? Is the stain on the suspect’s clothes blood? Whose fingerprints are on the stolen mid-year exams? Is the hair sample human or animal? Field trips to professional laboratories, the coroner’s office, police lab, and medical examiner will be an integral part of the course. Forensic Science is recommended for students who are interested in careers in medicine, law environment, police work, or security work.

BIOETHICSCourse No: **2109**

Grades 11-12

Credit: 0.5

Examination: Class Final

Prerequisite Living Environment Regents, Chemistry Regents, AP, Currently in 11th Grade.

The purpose of this course is to introduce students to bioethics as an interdisciplinary subject through critical thinking, writing, and discussion. Bioethics is neither biology nor ethics, but rather is designed, in its broadest aspect, as necessary to explore how science is connected to such fields as law, social science, public policy, economics, and even religion! Some topics of discussion will include the following: Intelligent Design; evolution with a twist? The Ethics of Multiple Births Using Fertility Treatments, Stem-cell Research, Bio-fuels: Driving our Food Source, Genetic Testing – Health Care Issues, Unnatural Selection, Voluntary Euthanasia, The Ethics of Organ Donation and Transplantation, Animal Welfare and Rights, Human Cloning, Plant genomics, the Human Genome Project.

ADVANCED PLACEMENT BIOLOGY (College Level)Course No: **1910**

Grades 11-12

Credit: 2.0 (Double Period)

Examination: AP Exam

Prerequisite: Living Environment R or H, Chemistry R or H and Algebra 1

Advanced Placement Biology is a freshman introductory) college-level biology course. Topics include ecological studies, comparative anatomy, biochemistry, anatomy, histology, microbiology, and genetics. Laboratory work is an essential part of the course. All students will be required to perform laboratory experiments and to complete laboratory reports. All students are required to take the College Board Advanced Placement Examination in May. 1

ADVANCED PLACEMENT CHEMISTRY (College Level)

Course No: **1915**

Grades 11-12

Credit: 2.0 (Double Period)

Examination: AP Exam

Prerequisite: Living Environment Honors and Chemistry Honors (Completion of Physics is highly recommended)

Advanced Placement Chemistry is a freshman (introductory) college-level chemistry course. Topics include atomic structure, bonding, stoichiometry, gas laws, thermodynamics, kinetics, chemical equilibrium, acid/base theory, solutions, organic chemistry, and nuclear chemistry. Laboratory work is an essential part of the course. All students will be required to perform laboratory experiments and to complete laboratory reports. All students are required to take the College Board Advanced Placement Examination in May.

PRE-NURSING PROGRAM

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The Pre-Nursing Program at Uniondale High School is a professional-oriented program designed to help students interested in the Nursing and Allied Health Careers. The program will emphasize the basic skills needed to pursue a career in nursing and other health careers. The students will be required to develop and demonstrate necessary skills through classroom, laboratory, and clinical internships in the community^ health care institutions. This specialized program will prepare students to advance to institutions of higher learning and successfully pursue training in the health care career of their choice. It is a program in which the students are required to follow a sequence of Science courses such as Biology, Chemistry, as well as Health Career Courses such as Pre-Nursing, Health Core, and Nurse Assistant courses. Students must successfully complete and pass courses in Living Environment and Chemistry. In addition to preparing students to earn a Regents High School Diploma, this program prepares students to obtain positions in health care while they attend college. Upon high school graduation, the students will be prepared to take the New York State Nursing Home Nurse Aide Certification Exam (CNA).

Grade Level	Pre-Nursing Sequence
9th Grade	Keyboarding Through Research
10th Grade	Health Occupations Education Core
11th Grade	Introduction to Pre-Nursing/Nurse
12th Grade	Advanced Pre-Nursing/Nurse Assisting

HEALTH OCCUPATIONS EDUCATION CORE

Course No: **4125**

Grade 10

Credit: 1.0

Examination: Class Final

Prerequisite: Successful completion and passing of the Living Environment course and Regents Examination. Keyboarding Through Research.

The purpose of this series of four courses is to provide students with an introduction to the skills, knowledge, and abilities required of all health care workers. Topics include an overview of all health careers, legal and ethical responsibilities of a health care worker, principles of infection control, personal health and wellness concepts, safety in the health care setting, CPR and First Aid, basic medical terminology, Anatomy & Physiology, and the basics of vital signs.

INTRODUCTION TO PRE-NURSING/NURSE ASSISTING

Course No: **2112**

Grade 11

Credit: 2.0

Examination: Class Final

Prerequisite: Health Occupations Education Core Required courses for Pre-Nursing/Nurse Assisting sequence students

This course is designed to provide the student interested in pursuing a nursing course of study with the opportunity to learn the basic nursing care skills required of the entry level health care provider in an acute-care or long-term care facility. Skills include communication techniques, infection control, personal care and hygiene, vital signs, assisting the client with ambulation, medical terminology, Anatomy & Physiology and disease processes, patient care skills, patient care assessment, and introduction to patient care equipment. The student will be able to practice the skills in our nursing lab under the supervision of a professional nurse instructor.

ADVANCED PRE-NURSING/NURSE ASSISTING

Course No: **2114**

Grade 12

Credit: 2.0

Examination: Class Final

Prerequisite: Introduction to Pre-Nursing/Nurse Assisting courses required for Pre-Nursing/Nurse Assisting sequence students

This course provides the students with the opportunity to learn and practice the advanced nursing skills required of an entry-level health care provider in an acute or long-term care facility. Topics include human sexuality including the aging process and its implications for client care, nutrition and diet therapy, pre and post-operative care, care of the patient on oxygen and ventilator, as well as job seeking and job keeping skills. Students will be required to complete a 120-hour internship at local acute-care and long-term care facilities to practice their nursing skills as well as practice in the nursing lab at Uniondale High School. At the completion of the course, students will be eligible to take the New York State Residential Aide certification exam (CNA) which is required for employment as a nurse aide in a long-term care facility.

Students in this course will alternate their schedules weekly, as follows:

Group A

Periods	Subject	Activity
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Schedule 1 A-Days 0-4	7:00 a.m.-10:20 a.m.	Internship at Acute Care Facility for 1st semester and Long-term Care Facility for 2nd semester
5	10:39 a.m.-11:22 a.m.	Lunch
6-9	11:26 a.m.-2:30 p.m.	Other Academic subjects
Schedule 2 B-Days 1-2	7:25 a.m. -8:55 a.m.	Physical Education, etc.
3-4	9:05 a.m. -10:35 a.m.	Advanced Pre-Nursing Course at UHS
5	10:39 a.m.-11:22 a.m.	Lunch
6-9	11:26 a.m.-2:30 p.m.	Other Academic subjects