SCIENCE DEPARTMENT

COURSE	COURSE LENGTH	CREDIT	WEIGHT

BIOLOGY R (LIVING ENVIRONMENT) (0412) year 1 1.0

Students study structure, physiology and behavior of living things. Students study variations among living things, heredity, evolution and ecology. Laboratory work is included.

PREREQUISITE: Completion of grade 8 Physical Science.

BIOLOGY H (LIVING ENVIRONMENT) (0400) year 1 1.05

This course is an advanced study of the structure and function of living things. Detailed study of taxonomy, human physiology, representative organisms, anatomy, genetics, evolution and ecology is maintained. Students have an enriched course experience with varied lab and field experiences. ***Recommended for college bound science majors.***

***PREREQUISITE*:** Successful completion of grade 8 Honors Earth Science **OR** meets criteria for entrance to Honors level.

EARTH SCIENCE R (0401) year 1 1.0

This course is designed to cover such topics as the earth's crust, geologic changes, fossils, the ocean, the atmosphere and weather, earth motions, and energy in earth processes. Laboratory work is included.

***PREREQUISITE*:** Completion of grade 9 Science.

EARTH SCIENCE H (0404) year 1 1.05

The topics covered in this course include environmental equilibrium, the dynamics within Earth's crust, oceans, and atmosphere, geologic composition, fossils, planetary motions, and energy in Earth processes. This is an enriched laboratory course which integrates Internet activities and discussions of current topics.

PREREQUISITE: Successful completion of 9th grade Honors Biology **OR** meets criteria for entrance to Honors level. Teacher recommendation is required.

CHEMISTRY RP (0428) year 1 1.0

This is a full year laboratory course that will cover the New York State Regents core curriculum. The emphasis will be on the practical applications and impact of chemistry in society and in our daily lives. Students who successfully complete this course will have the option of taking the New York State Chemistry Regents exam.

***PREREQUISITE*:** Successful completion of the Living Environment course and a passing grade on the Regents exam. Open to grades 11 and 12.

CHEMISTRY R (0424) year 1 1.0

This course is designed to cover such topics as the nature of matter and its changes, energy, the periodic table and its applications, electrochemistry, kinetics and equilibrium. Laboratory work is included. This course is designed for college-bound students.

***PREREQUISITE*:** Successful completion of Regents Biology and the completion of or current enrollment in Integrated Algebra 2/Trigonometry.

CHEMISTRY H (0410) year 1 1.05

Nature of matter and its changes: energy, periodic chart and its applications, enhancement of problem solving abilities relative to chemical reactions and properties is taught in this course. It provides an opportunity to prepare for enriched laboratory activities.

PREREQUISITE: Successful completion of 9th grade Honors Biology. Completion of Integrated Algebra2/Trigonometry or Geometry H is recommended **OR** meets criteria for entrance to Honors level.

COURSE	COURSE LENGTH	CREDIT	WEIGHT

PHYSICS R (0444) year 1 1.0

This is a laboratory course which covers physical concepts and applications in areas of mechanics, energy, electricity, magnetism, and light. This course is intended for college-bound students.

***PREREQUISITE*:** Successful completion of Regents Chemistry and Integrated Algebra 2/Trigonometry.

PHYSICS H (0445) year 1 1.05

This is an enriched laboratory course which is strongly quantitative and analytical. The course covers physical concepts and applications in areas of mechanics, energy, electricity, magnetism, and light. This course is intended for college-bound science majors.

PREREQUISITE: Successful completion of Chemistry and Integrated Algebra 2/Trigonometry. Must meet criteria for entrance to Honors level.

ADVANCED PLACEMENT BIOLOGY (0434) year 1 1.15

This course gives students the opportunity to prepare for the Advanced Placement Examination in Biology. High-level laboratory experiments are performed. College course approach will be used. Students are expected to take the *AP examination* in Biology in May

***PREREQUISITE*:** Completion of Biology H and Chemistry H. Must meet AP Entrance Criteria. Concurrent enrollment in Human Anatomy and Physiology H is highly recommended.

ADVANCED PLACEMENT CHEMISTRY (0442) year 1 1.15

This is a college level course which provides a systematic introduction to the principles, laws and concepts of chemistry. The students will be expected to develop and use their problem solving skills. A major intent of the course will be to prepare the students for the AP exam, which they will be expected to take in May.

PREREQUISITE: Completion of Biology H, Chemistry H, and Physics H. (Physics H may be taken concurrently.) Completion of Integrated Algebra 2/Trigonometry H. Must meet AP Entrance Criteria.

ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE (0452) year 1 1.15

This course is designed to be the equivalent of a one-semester, introductory college course in environmental science.

The goal of the AP Environmental Science course is to provide students of Long Island with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. The environmental problems of Long Island will be identified and analyzed to evaluate the relative risks associated with each situation.

PREREQUISITE: Completion of two years of Regents science. Must meet AP Entrance Criteria.

ADVANCED PLACEMENT PHYSICS (B) (0436) year 1 1.15

(Grade 11 or 12)

This college level course provides a systematic introduction to the main principles of physics and the development of problem solving abilities. Provides a foundation for students interested in pursuing life sciences, pre-med and other fields not directly related to service. Students are expected to take both the *AP and Regents* examinations.

PREREQUISITE: Successful completion of Chemistry H and Integrated Algebra 2/Trigonometry H. Must meet AP Entrance Criteria.

COURSE	COURSE LENGTH	CREDIT	WEIGHT
ADVANCED PLACEMENT PHYSICS (C) (0440) **(Grade 12)**	year	1	1.15

This college level course is the foundation for students interested in majoring in physical sciences or engineering. Methods of calculus are employed in problem solutions. Students should be enrolled in calculus. Subject matter emphasis is on mechanics, electricity and magnetism. Students are expected to take the *AP examination* in May.
PREREQUISITE: Advanced Placement Physics (B) and teacher recommendation. Must meet AP Entrance Criteria.

ASTRONOMY - EXPLORATION OF THE UNIVERSE (ASTRONOMY I) (0430)	sem	½	1.0

This course is intended to present a study of the universe in which students explore galaxies, the stars, and the possibility of life in other worlds. The use of the planetarium will be an integral part of instruction.
***PREREQUISITE*:** Successful completion of two years of Science including Regents Earth Science.

ASTRONOMY - UNDERSTANDING THE SOLAR SYSTEM (ASTRONOMY II) (0433)	sem	½	1.0

This course is intended to present a study of our solar system and the laws which govern the properties of the planets, moons, comets, meteors, asteroids, and our sun. The use of the planetarium will be an integral part of instruction.
PREREQUISITE: Successful completion of two years of Science including Regents Earth Science.
(**ASTRONOMY I is not a prerequisite for this course**)

ASTROPHYSICS H (0460)	sem	½	1.05

This half-year Honors elective course explores the concepts and theories of astrophysics. The more challenging topics from the Astronomy I and Astronomy II curricula are addressed in great detail. Students will integrate much of what they have learned in their physics, chemistry, biology and earth science classes as well. College level astronomy labs can and will be modified to help reinforce the material presented during the semester.
PREREQUISITE: Physics. Open to grades 11 and 12. This course is not open to students who have earned credit for Astronomy I or Astronomy II.

HUMAN ANATOMY AND PHYSIOLOGY H (0462)	sem	½	1.05

In this half-year Honors elective, students will study human anatomy and physiology. They will gain further knowledge of the systems of the human body. The physiology of each system will be compared to the physiology of the systems of other species. Dissections will be performed.
PREREQUISITE: Biology. Open to grades 11 and 12.

MARINE SCIENCE (0453)	sem	½	1.0

This is a one semester course devoted to studying the organisms that live in the marine habitats of Long Island and ecological relationships that exist between them and us.
PREREQUISITE: Two years of science. Open to grades 11 and 12.

STRANGE SCIENCE (0461)	sem	½	1.0

This half-year elective course will address some of the strange and bizarre phenomena experienced on our planet. Everything, from uncommon life forms, which live in strange habitats, to unusual places, such as the Green Sand Beach of Hawaii, will be explained through scientific concepts and reasoning.
PREREQUISITE: Two years of science. Open to grades 11 and 12. This course is not open to students who have earned credit for "Mysteries of Science".

COURSE	COURSE LENGTH	CREDIT	WEIGHT

FORENSIC SCIENCE (0454) sem ½ 1.0

This course will devote one semester to studying the role that forensic science plays in anthropology, history and crime detection. Considerable attention will be given to the role that forensic science plays in society.

PREREQUISITE: Successful completion of two years of science including Regents level biology.

NATURAL DISASTERS (0458) sem ½ 1.0

This is a one semester course that will focus on the causes of natural disasters and their impact on our planet and the populations of living organisms on the planet. Topics covered could include the study of hurricanes, tidal waves, volcanoes, earthquakes, meteorites, tornados, global warming, ozone depletion, land slides, avalanches and mud slides.

PREREQUISITE: Two years of science. Open to grades 11 and 12.

THEORY OF RELATIVITY (0459) sem ½ 1.05

This honors level course is an introduction to the most profound idea of the 20th century, Einstein's Special Theory of Relativity. Topics include wave-article duality, Heisenberg's Uncertainty Principle, time dilation and length contraction. This challenging class will forever change the way you think.

PREREQUISITE: Physics. Open to grades 11 and 12.

RESEARCH 9: INTRODUCTION TO RESEARCH (0490) year 1.05

This one year honors level course introduces students to the scientific method and lab techniques. Students will conduct hands on investigations in the life sciences. Students will also have the opportunity to conduct a research project in their area of interest.

RESEARCH 10 – BIOTECHNOLOGY (0487) year 1.05

This one year honors level course may be taken following the Introduction to Research course. Research 10 introduces students to lab techniques specifically in the field of biotechnology. Students will conduct hands on investigations in which they extract, digest and amplify segments of DNA for analysis. Students will also conduct a research project in the area of biotechnology. Some projects may be entered into local, regional, and/or national science competitions. At the conclusion of this course, students will be prepared to conduct an extended research project in Research 11, 12, or for Albany credit if it applies.

RESEARCH 11 (0492) year 1.05

Students learn research methodology in the natural and social sciences by using on-line databases and bibliographic search techniques, consulting professionals in the field of study, developing hypotheses and conducting an experiment that tests them. Findings are presented through PowerPoint presentations, a final research paper and by making a presentation at the West Islip Science Research Symposium. It is expected that the students will be familiar with many of these activities from prerequisite courses. **Emphasis is placed upon developing and conducting the research experiment.**

PREREQUISITE: Two years of science, completion of Introduction to Research and Research 10.

Students who meet enhanced criteria may be eligible for 4 college credits through the UHSP at SUNY Albany. See instructor for additional requirements.

RESEARCH 12 (0493) year 1.05

Continuation of work undertaken in grade 11 with **emphasis placed upon the communication of results** including participation in local and national science competitions.

PREREQUISITE: Three years of science, satisfactory completion of Research 11.

Students who meet enhanced criteria may be eligible for 4 college credits through the UHSP at SUNY Albany. See instructor for additional requirements.

COURSE	COURSE LENGTH	CREDIT	WEIGHT
SUNY ALBANY RESEARCH 11 (0488)	year	1	1.15
SUNY ALBANY RESEARCH 12 (0495)	year	1	1.15

Students must earn three science credits at the high school level in order to meet New York State graduation requirements.