

# SCIENCE COURSES

**330\_ Physical Science/Earth (Lab Science) Grade 9 1 Unit**

This course is an introduction to basic concepts of physics, chemistry and earth science. Units of study will include mathematics of science, the physical and chemical nature of matter, laboratory procedures, geology, meteorology, astronomy and oceanography. In it students will be asked to develop interrelationships, historical, and future perspectives, as well as the application of these in modern society.

**332\_ Biology (Lab Science) Grades 10, 11, 12  
1 Unit**

This course is designed for students who plan to go to college. Emphasis of study will be placed on the biochemical, physiological, morphological, ecological, bacteriological, embryonic, nutritional, pathological and biographical natures of life. Upon completion of this course a student will have a knowledge of the principles on which all life depends, and an awareness of the interdependency of organisms in the biological world with reference to the balance of nature and conservation.

**3329 Honors Biology (Lab Science) Grades 9 \*, 10, 11, 12  
1 Unit**

Honors Biology will cover topics similar to those covered in the college prep biology class: the principles and interrelationships of living forms with reference to the balance of nature and a realistic concern for the environment. These topics will be covered in greater depth, placing more emphasis on the self-reliance of the student. Biochemistry will be emphasized, and students will be expected to write science papers and work on science projects.

*Prerequisite:* Physical Science/Earth – Recommended: Mark of “B” or better in preceding science course for success in this program. Recommendations from previous science teacher, department chairperson and counselor.

\* Open to incoming 9<sup>th</sup> grade students who meet the following criteria:

1. Grades of “A” 7<sup>th</sup> and 8<sup>th</sup> grade science and 8<sup>th</sup> Grade science teacher recommendation (based on student’s interest and motivation.)
2. Reading Goal on 7<sup>th</sup> Grade CMT in Math & Reading
3. Students taking and obtaining a grade of “B” or better in Algebra in 8<sup>th</sup> grade.

**3330 Advanced Placement Biology (Lab Science) Grades 11, 12  
1 Unit**

This is a college-level course for mature students of biology, which includes an evolutionary study of animals and plants illustrating their interrelationships. It is a study of the anatomy and physiology of the human being emphasizing principles in regard to cellular biology, biochemistry, anatomy, physiology, heredity and evolution. Students are expected to contribute to class through seminars, demonstrations of significant laboratory skills, preparation of scientific papers and readings of science journals. Completion of research project is required. Students are expected to take the Advanced Placement exam.

*Prerequisite: Biology and Chemistry. Recommended mark of “B” or better in the preceding courses for success in this program. Enrollment only with departmental approval.*

**3331 Honors Chemistry (Lab Science) Grades 10  
1 Unit**

This course is for students in the accelerated science sequence and provides an in-depth concentrated study of topics studied in high school chemistry. The work is rigorous and challenging and laboratory activities constitute a major part

of this course's curriculum. In addition, CAPT embedded task will be given and expanded upon for all students. Students are expected to work at a higher performance level and complete a project.

*Prerequisite:* "C" or better in Biology ("B" recommended),

*Co-requisite:* Algebra II

**3332 Marine Biology**

**Grades 11, 12**

**1/2 Unit**

This course is designed as a marine environmental study focusing on the fauna and flora of the intertidal zones, estuaries and marshlands of **Long Island Sound**. This course will include field trips to these areas, the use of instruments and charts to collect data from a variety of marine environments and laboratory exercises to identify and classify marine organisms. Significant aspects of physical and chemical oceanography will be integrated into the course of study. Rain, snow, mud and water conditions will be encountered.

*Prerequisite:* Physical Science/Earth and Biology. Mark of "C" or better in Biology for success in this program.

*Recommendations from previous science teachers.*

**3334 Biotechnology**  
**1/2 Unit**

**Grades 11, 12**

This introduction to biotechnology course is designed to develop student academic, communication and scientific inquiry skills through in-depth investigations into the products created in the biosciences through the manipulation of an organism's DNA. These investigations will include the biology of the human body, the environment and agriculture. The course will include both in-school labs and on-line simulations.

*Co-requisite:* C or better in a full year of Biology and Chemistry

**3336 Human Anatomy and Physiology (Lab Science)**

**Grades 11, 12**

**1 Unit**

Human Anatomy and Physiology includes the study of all structures within the major organ systems of the human body. The morphology of these systems will be directly correlated with how major structures are able to function. This course is designed to examine a healthy state of the human body in comparison with the abnormalities and their physiological effects that result from disease. A comprehensive review of biology, chemistry, and other biological sciences will be integrated throughout this full year course. Dissections will serve as a significant form of assessment allowing practical application of the knowledge attained throughout the semester. Course material will be covered in depth and at a demanding pace.

*Prerequisite:* "C" or better in a full year Biology and Chemistry

**3341 Physical Science/Chemistry**

**Grades 11, 12**

**1/2 Unit**

This course is a introduction to chemistry for students who do not intend to pursue a career in science. The course consists of selected concepts in chemistry and includes conservation laws, chemical changes and solution chemistry. This is a hands-on course with emphasis on qualitative rather than quantitative results.

*Prerequisite:* Physical Science/Earth and Biology

**334\_ Chemistry (Lab Science)**

**Grades 10, 11, 12**

**1 Unit**

This course covers the following topics: properties of materials, the transformations which matter undergoes, the conditions affecting those transformations and the nature and amount of energy released or absorbed in these changes, the uses of materials and creation of new substances. Emphasis is placed upon mathematical application to chemistry and an extensive degree of laboratory work. Recommended C or better in the prerequisite courses.

*Prerequisite:* Algebra I A/B, Physical Science/Earth, Biology

**3349 Honors Chemistry (Lab Science)**

**Grades 10, 11, 12**

**1 Unit**

This course provides an in-depth concentrated study of topics studied in high school chemistry. The work is vigorous and challenging and laboratory activities constitute a major part of this course's curriculum. Students are expected to work at a high performance level and complete a research project.

*Prerequisite:* Algebra I A/B, Physical Science/Earth, Biology

*Co requisite:* Algebra II. Recommended mark of "B" or better in preceding science courses for success in this program.



**3370 Advanced Placement Physics**  
**1 Unit**

**Grade 12**

The AP Physics course forms the first part of the college sequence that serves as the foundation in physics for students majoring in the physical sciences or engineering. This course will follow the curriculum guidelines developed by the College Board for AP Physics B. The course spans a broad range of topics from physics and will utilize methods of algebra and trigonometry. Strong emphasis is placed on solving a variety of problems, analysis following experimentation in the laboratory as well as class discussions. Students are expected to take the Advanced Placement exam.

*Prerequisite: Physics. Co-requisite: Pre-calculus Recommended grade of "B" or better in the preceding courses for success in the program.*

**3381 Astronomy**  
**1/2 Unit**

**Grades 10, 11, 12**

A rigorous study of astronomy to provide an understanding of the order of the universe and an awareness of man's place in this order. This course includes such diverse topics as the modern concept of the origin of the universe, the life and death of stars, galactic evolution, pulsars, quasars and black holes.

*Prerequisite: Algebra I A/B, Physical Science/Earth*

**3382 Earth History**  
**1/2 Unit**

**Grades 10, 11, 12**

An investigation of the basic concepts in the science of tectonics, topography, stratigraphy, volcanism, fossils and mineralogy. The concepts will be studied and applied through problem- solving activities and experimentation through field experiences.

*Prerequisite: Physical Science/Earth*

**3383 Ecology/Environmental Science**  
**1/2 Unit**

**Grades 11, 12**

An introduction to the biological and non-biological factors of the environment and their effects on environments and inter-environmental relationships, including an investigation into methods of control and management of human-populated environments. Environmental outdoor laboratory sessions in the Norwalk area are part of the course.

*Prerequisite: Biology*

**3385 Forensics**  
**1/2 Unit**

**Grades 11, 12**

Forensics is the application of science to those criminal and civil laws that are enforced by police agencies in a criminal justice system. Discussion in this course will be limited to only those areas of chemistry, biology, physics, and geology that are useful for determining the value of crime scene and related evidence. Work in this course will center around the science and technology of evidence collection. This course will be a comprehensive review of biology, chemistry, physics and other science topics. Topics covered will include fingerprinting, body fluids, DNA typing, fire tread analysis, hair and fiber analysis, metallurgy, polygraph testing, ethics, and legal issues.

*Prerequisite: "C" or better in a full year of Biology and Chemistry*

**3386 Research Methods in Science**  
**1 Unit**

**Grades 10, 11, 12**

This course will explore all aspects of authentic scientific research starting from the selection of a research topic or problem, the development of a research plan, the gathering of relevant information, and the formulation of an acceptable experimental design with the appropriate instrumentations, and the collection and analysis of data leading to a formal presentation and defense of the suggested solution. All students will have to complete a research paper, carry out required lab activities which demonstrate use and understanding of specific instrumentation and complete an in-depth investigation following the process accepted as good scientific experimentation by state and national agencies. Students will also be required to present their research findings either at a school/district event (Norwalk's science fair) or at a state/national competition or conference. (Does not count for graduation credit in science)

*Prerequisite: "B" or better in a full year Biology or permission of department head*

**3387 Research Methods in Science**  
**1/2 Unit**

**Grades 10, 11, 12**

This full year course which meets every other day will explore all aspects of authentic scientific research starting from the selection of a research topic or problem, the development of a research plan, the gathering of relevant information, the formulation of a acceptable experimental design with the appropriate instrumentations, and the collection and analysis of data leading to a formal presentation and defense of the suggested solution. All students will have to complete a research paper, carry out required lab activities which demonstrate use and understanding of specific instrumentation and complete an in-depth investigation following the process accepted as good scientific experimentation by state and national agencies. Students will also be required to present their research findings either at a school/district event (Norwalk's science fair) or at a state/national competition or conference. (Does not count for graduation credit in science).

Prerequisite: "B" or better in a full year Biology or permission of department head

**3388 Meteorology**  
**1/2 Unit**

**Grades 11, 12**

Meteorology is the study of earth's gaseous envelope, its atmosphere and its role as it processes the sun's daily assault of energy. Storms, winds, climate patterns, seasons all relate their characteristics to the interaction of the sun's energy and earth's atmosphere. Topics include atmospheric structure, composition and motion; atmospheric evolution throughout earth's history; understanding and making observations using standard meteorological tools and instruments; daily and long-range weather forecasting; effects of severe weather on the environment; humanity's continuing struggle to prepare for the consequences of living in the path of destructive storms or extreme weather conditions.

Prerequisite: "C" or better in Physical Science/Earth and Biology

**3390 Science and Society**  
**1/2 Unit**

**Grades 11, 12**

This course will explore controversial topics within our society through a scientific approach which takes into consideration the scientific, political, legal and economic aspects of current problems. Topics to be explored include: Global Warming, Cloning and Genetic Engineering, Alternative Forms of Energy, Emerging Diseases and Environment Pollution. Course work will center around research, lab work, case studies, debates and position papers. A good background in the 9<sup>th</sup> and 10<sup>th</sup> grade science will help ensure success in this class.

**3400 Science Graduation Prep**  
**0 Unit**

**Grade 12**

This required course is specifically designed to provide assistance to all those seniors who have not yet reached the performance standard in science required for graduation. Students will meet in small groups with a teacher to learn concepts in the areas of biology, chemistry, physics, and the Earth sciences similar to those found on the CAPT. At the conclusion of this quarter-long course each student will take a CAPT-like assessment that can earn the student the certification in science proficiency necessary for graduation. In addition, students must meet the same attendance requirements for Grad Prep as they do for all other courses.

