

## Science Department Curriculum Overview

### 9th Grade

*Required*  
Biology I or  
Biology I - Honors  
*Electives*  
None

### 10th Grade

*Required*  
Anatomy/Phy or  
Anatomy/Phy – H, or  
Chemistry I, or  
Chemistry I – Honors, or  
Environmental Science, or  
Physical Science  
*Electives*  
None

### 11th Grade

*Required*  
Chemistry I or  
Chemistry I – Honors, or  
Anatomy & Physiology, or  
Anatomy & Physiology – H, or  
Biology II – Honors, or  
Physical Science, or  
Environmental Science, or  
Conceptual Physics I, or  
Physics I, or  
Physics I - Honors  
*Electives*  
None

### 12th Grade

*Required*  
None  
*Electives*  
Anatomy & Physiology  
Anatomy & Phys - Honors  
Biology II - Honors  
AP Biology  
Physical Science  
Environmental Science  
AP Environmental Science  
Physics I  
Physics I - Honors  
AP Physics C  
Environmental Health Ethics

## Course Descriptions

(Courses listed alphabetically by course title)

**AP Biology \*754\***    \$ AP EXAM FEE    **\*\$50\***    **Phase 4**    **SUS/FBF**    **2000340**    **[Year]**

The goal of this course is for students to have a complete understanding of the topics and concepts in the *AP Biology Course Description* as per the College Board. Topics covered include the molecular basis of life, cells, genetics and heredity, evolution and diversity, microbiology, plants, animals, and ecology. This is a laboratory-based, investigative course. Students are expected to be able to draw hypotheses and come up with expected results for the lab procedures as well as, make inferences with regards to application of the knowledge gained through the lectures and readings. Students will complete the 12 laboratory exercises recommended by the College Board. Students enrolled in this course may occasionally be required to attend Saturday/after or before school lab sessions. Also available for Dual Enrollment credit.

**Prerequisite:** 90 or better in Biology II - Honors or 90 or better in Anatomy and Physiology – Honors, and recommendation of the Science Department Chairperson. Student **MUST** take the AP Exam in May. **Fee required for both the course and AP examination.**

**AP Environmental Science \*780\***    \$ AP EXAM FEE    **\*\$50\***    **Phase 4**    **SUS/FBF**    **2001380**    **[Year]**

This course provides 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 and/or preventing them. Students enrolled in this course may occasionally be required to attend Saturday lab sessions.

**Prerequisite:** 87 or higher in Anatomy/Physiology Honors and/or 87 or higher in Biology II-Honors AND chemistry with a 3.33 GPA or higher. Student **MUST** take the AP Exam in May. **Fee required for both the course and AP examination.**



**AP Physics C- Mechanics \*740\* \*\$50\* Phase 4 SUS/FBF 2003430 [Year]**

This course provides a systematic introduction to the main principles of physics and emphasizes development of conceptual understanding and problem-solving ability using algebra, trigonometry, and calculus. Physics C forms the first part of the college sequence that serves as the foundation in physics for students majoring in the physical sciences, engineering, or medicine. The subject matter of Physics C is principally mechanics and electricity and magnetism. The sequence is parallel to or preceded by mathematics courses that include calculus. One part of the Physics C Advanced Placement Examination covers Mechanics; the other part covers Electricity and Magnetism. Students **must** take either or both parts of the AP Exam.

**Prerequisite:** Concurrently enrolled in Calculus-Hrs. or AP Calculus, and score 60% or higher on a placement exam, which must be taken before enrolling in AP Physics, or 93 in Conceptual Physics or Physics I, and recommendation of the department chairperson. **The student must take the AP test at the end of the year. Fee is set by the College Board.**

**Anatomy/Physiology \*732\* \*\$25\* Phase 2 SUS/FBF 2000350 [Year]**

This course is geared for the average student interested in pursuing a career in the medical field. It will provide exploratory activities in the structures and functions of the components of the human body. This course is enhanced with laboratory experiences. Fee required.

**Prerequisite:** 73 or better in Biology I or 70 or better in Biology I-Honors or Algebra I (phase 1) with 95 or better in Biology I (phase 2) and cumulative average of 2.33 or better and teacher recommendation. Enrollment preference is given to juniors and seniors. If the student does not meet the pre-requisites, the student must obtain a signed approval from the course's teacher.

**Anatomy/ Physiology – Honors \*733 \*\$25\* Phase 3 SUS/FBF 2000360 [Year]**

This course is geared for the above average student who is interested in pursuing a career in the medical field. It provides a comprehensive survey of the anatomy and physiology of the human body, as well as current medical information. The course is enhanced by a wide selection of media and is further supplemented by guest speakers, comprehensive laboratory and practical testing. Fee required. Also available for Dual Enrollment credit.

**Prerequisite:** 83 or better in Biology I or 77 or better in Biology I - Honors and cumulative average of 3.33 or better and teacher recommendation. If the student does not meet the pre-requisites, the student must obtain a signed approval from the course's teacher.

**Biology I \*712\* \*\$25\* Phase 2 SUS/FBF 2000310 [Year]**

This course is designed to give the student a thorough knowledge of the development of biological principles starting with simple levels of biological organizations and progressing to more complex levels. This course is designed also to give the student the information and tools necessary for applying the scientific method in scientific investigation. Laboratories are used to reinforce scientific investigation. Microscope use and simple animal dissections are introduced. Course content includes cell biology, biological chemistry, genetics, reproduction and AIDS awareness. Additional topics include animal digestion, transport, gas exchange, and excretion. Fee required.

**Prerequisite:** departmental placement

**Biology I – Honors \*713\* \*\$25\* Phase 3 SUS/FBF 2000320 [Year]**

The purpose of this course is to provide advanced exploratory experiences and activities in the fundamental concepts of life. Topics such as the scientific method and measurements, laboratory safety and use of apparatus, biochemistry, cell biology and reproduction, genetics, classification and taxonomy, microorganisms and disease, structure and function of plants and animals, ecological relationships, as well as topics concerned with the environment and diseases that pertain to today's world are covered. Lectures are reinforced with practical laboratory experiments. Fee required.

**Prerequisite:** departmental placement



**Biology II – Honors \*753\* \*\$50\* Phase 3 SUS/FBF 2000330 [Year]**

This course gives an overview of the functions of living things, placing an emphasis on their organizations (both anatomical and cellular metabolism and behavior). Topics include: genetics and DNA technology, reproduction, regulation of the internal environment, responsiveness, coordination, and evolution. Microscopic and dissecting techniques will be introduced. Fee required.

**Prerequisite:** 83 or better in Biology I or 77 or better in Biology I - Honors and cumulative average of 3.33 or better and teacher recommendation. If the student does not meet the pre-requisites, the student must obtain a signed approval from the course's teacher.

**Chemistry I \*722\* \*\$30\* Phase 2 SUS/FBF 2003340 [Year]**

This course introduces the student to topics in inorganic chemistry ranging from the properties of matter to solution chemistry. Lecture theory will be reinforced with practical laboratory experiments. Algebra topics will be reviewed as needed. Fee required.

**Prerequisite:** 77 or better in Algebra I (phase 2) or 70 or better in Algebra I Honors and cumulative average of 2.33 or better, or successful completion of Algebra 1 (phase 1) and Physical Science. If the student does not meet the prerequisites, the student must obtain a signed approval from the course's teacher.

**Chemistry I – Honors \*723\* \*\$25\* Phase 3 SUS/FBF 2003350 [Year]**

This course introduces the student to various topics in inorganic chemistry ranging from the properties of matter to solution chemistry and electrochemistry. Quantitative problem solving will be emphasized. Lecture theory will be reinforced with practical laboratory experiments. Fee required.

**Prerequisite:** 90 or better in Algebra I (phase 2) or 80 or better in Algebra I Honors and cumulative average of 3.33 or better and teacher recommendation: If the student does not meet the pre-requisites, the student must obtain a signed approval from the department chairperson

**Environmental Health Ethics \*703\* \*\$25\* Phase 3 SUS/FBF 2002430 [Year]**

The course focuses on dynamic interactions of biological organisms and the atmospheric environment; it will examine health issues, scientific understanding of causes, and possible future approaches to control major environmental health problems. The course will focus on environmental health, causes, effects, and ethical reasoning. Labs, field work, as well as case problems are some, but not all, of the activities in which students will engage.

**Prerequisite:** approval of department chairperson; Anatomy/Physiology-Hnrs., Biology II-Hnrs, or Anatomy/Physiology with an 80 average in the course, *and* a 3.0 GPA, *and* senior standing. Juniors requesting the class will be evaluated first on a case-by-case basis by the department chairperson.

**Environmental Science \*725\* \* \$15\* Phase 2 SUS/FBF 2001340 [Year]**

This course will integrate various concepts of life, earth and physical sciences as they relate to the environment. All current environmental topics (including water quality, pollution, resources, land management, recycling, conservation, population dynamics, and economic implications), will be discussed at length with special emphasis on the local environment and ecology. Lab and field work will reinforce the concepts covered in class.

**Prerequisite:** 73 or below in Biology I or 63 or below in Biology I–Honors, chemistry, and cumulative average of 2.33 or better or department chairperson recommendation

**Physical Science \*728\* \* \$15\* Phase 2 SUS/FBF 2003310 [Year]**

This is an introductory course that permits the student to form a basic understanding of physics and chemistry. Topics include: matter and energy, property changes and composition of matter, acids, bases and salts, chemistry of water, causes of motion, heat energy, wave motion and energy. This course is also geared to applying basic concepts to modern applications, for example, environmental education, energy education, consumer education, and occupational education.

**Prerequisite:** Sophomore standing and teacher placement. All students from Algebra I (phase 1), as well as students with a 73 or below in Algebra I (phase 2) or 67 or below in Algebra I-Honors will be placed in this course.



**Physics I \*742\* \*\$25\* Phase 2 SUS/FBF 2003380 [Year]**

This course represents a general overview of the topics of physics. It is the study of matter and the laws that govern it. Topics include force and motion, work and energy, heat, electricity and magnetism, and energy of waves. Laboratory experiments will reinforce concepts covered in class. Fee required.

**Prerequisite:** 73 or better in Geometry Honors or 80 or better in Algebra II and concurrently enrolled in Pre-calculus/ Precalculus Honors/or more advanced math course. Student must also have a cumulative average of 2.55 or better and a teacher recommendation. If the student does not meet the pre-requisites, the student must obtain a signed approval from the department chairperson.

**Physics I – Honors \*743\* \*\$25\* Phase 3 SUS/FBF 2003390 [Year]**

The purpose of this course is to provide a rigorous introductory study of the theories and laws governing the interaction of matter, energy and the forces of nature. Students use the scientific method to solve problems, employ the metric measurements, and demonstrate safe and effective use of laboratory instruments. They will study Newton's laws of motion and gravitation, the First and Second Law of Thermodynamics, simple harmonic and projectile motion, and calculate friction and torque and uniform circular motion problems. Students will learn the laws that govern gases, liquids and solids as well as electric and magnetic forces and the nature of sound. Laboratory experiments will reinforce concepts covered in class. Fee required.

**Prerequisite:** Concurrently enrolled in Pre-Calculus-Honors, Calculus or AP Calculus, with a cumulative average of 2.75 or higher, and recommendation of teacher. If the student does not meet the pre-requisites, the student must obtain a signed approval from the department chairperson.

**Forensic Science – Summer Enrichment (Honors Course)**

Forensic science is the application of basic biological, chemical and physical science principles and technological practices to the purposes of justice in the study of criminal and civil issues. Major themes of study in this course are pathology, anthropology, odontology, ballistics, trace evidence, biological fluids, DNA, fingerprints, impression evidence, questioned documents and forensic psychiatry/psychology. The class is student and inquiry centered with a primary focus on laboratory investigations and writing. The semester course is taught over a 10 day period during the first weeks of summer vacation and may require Saturday sessions. All classes are mandatory due to the compact schedule. Summer School fee applies.

**Prerequisites:** 93 or higher in Anatomy/Physiology (phase 2) and/or 87 or higher in Anatomy/Physiology Honors and/or 87 higher in Biology II Honors and/or 93 or higher in Chemistry and/or 87 higher in Chemistry Honors and 3.33 GPA

