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 - H
Biology II - Honors
AP Biology
Physical Science
Environmental Science
Conceptual Physics I
Physics I
Physics I - Honors
AP Physics C
Environmental Health Ethics

Course Descriptions
(Courses listed alphabetically by course title)

AP Biology * $50 * Phase 4 * SUS/FBF * 2000340 [Year]

This course is designed to give the student a thorough knowledge of the various aspects of biology. The emphasis is placed on molecular and cellular organization, genetic controls, reproductive mechanisms, metabolism, responsiveness and evolution. The organization of this course imparts a better appreciation of the unity underlying the diversity of life. The course also includes topics on cancer biology, treatments of immunology, the neurophysiology of the human brain, the origin of life, left-handed DNA, DNA replication, the special genetic code of mitochondria, chemosmosis, intermediate filaments in cells, facilitated diffusion, temperature regulation invertebrates, the adaptive significance of behavior, archaebacteria, prochlorophyta, freshwater and marine ecosystems, density-dependent and independent checks on population growth, island biogeography, and the evolution of Homo Sapiens. Students enrolled in this course may not elect to take early dismissal (this is a double period course) and are required to take the AP exam in May. Fee required for both the course and AP examination. Also available for Dual Enrollment credit.

Prerequisite: B or better in Biology II - Honors or B or better in Anatomy and Physiology - Honors and recommendation of the Science Department Chairperson

AP Physics C - Mechanics * $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. Also available for Dual Enrollment credit.

Prerequisite: Concurrently enrolled in Calculus-Hnrs. or AP Calculus, and score 60% or higher on a placement exam, which must be taken before enrolling in AP Physics, or an A in Conceptual Physics or Physics I, and recommendation of the department chairperson.

Anatomy/Physiology * $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: C or better in Biology I or C- or better in Biology I - Honors and cumulative average of 2.33 or better and teacher recommendation. Enrollment preference given to juniors and seniors.

Anatomy/ Physiology – Hnrs. * $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: B or better in Biology I or C+ or better in Biology I - Honors and cumulative average of 3.33 or better and teacher recommendation

Biology I * $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 * $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 * $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: B or better in Biology I or C+ or better in Biology I - Honors and cumulative average of 3.33 or better and teacher recommendation

Chemistry I * $25 * Phase 2 * SUS/FBF * 20003340 [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: C or better in Algebra I or D+ or better in Algebra I - Honors and cumulative average of 2.33 or better, or successful completion of Algebra 1

Chemistry I – Honors * $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: B+ or better in Algebra I or C+ or better in Algebra I - Honors and cumulative average of 3.33 or better and teacher recommendation

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

The purpose of this course is to present students with the basic concepts and principals of Physics. Six fundamental units will be covered: mechanics, waves, properties of matter, thermodynamics, electricity and magnetism, and atomic and nuclear physics. The course will be complemented with activities and experiments to assist students in exploring, developing, and applying the concepts of Physics. Fee required.

Prerequisite: Successful completion of Algebra I, a cumulative average of 2.5 or better, and recommendation of department chairperson

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

The course focuses on dynamic interactions of biological organisms and the atmospheric environment; human's effects on the vitality of ecosystems will be especially explored. Special attention will be given to environmental practices that support human existence and an overview of factors that are harmful and have a deleterious effect on human life. The course will focus on environmental health, causes, effects, and ethical reasoning. The class will also highlight the relationships between life in the modern world and the development of science and technology. Special attention will be dedicated to the study of environmental issues and potential solutions to these problems. Labs, as well as case problems, will allow students to formulate questions, predict, plan experiments, observe, interpret, analyze data, and draw conclusions.

Prerequisite: Approval of Dept. Chairperson; Anatomy/Physiology-Hnrs., Biology II-Hnrs, or Anatomy/Physiology with a B 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 Dept. Chair.

Environmental Science * $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. Students will visit the Everglades ecosystem after intensive study. Lab and field work will reinforce the concepts covered in class.

Prerequisite: C- or better in Biology I or D or better in Biology I – Honors, chemistry, and cumulative average of 2.33 or better or department chairperson recommendation

Introduction to Engineering * $30* Phase 2 * SUS/FBF * 2002330 [Year]

The course is designed to increase students' level of interest in the technological fields, such as mechanics, construction, computers, electric power transmission, and biotechnology. The purpose of the course is to introduce students to the engineering profession. By introducing students to the way engineers think, ask, and answer questions, emphasis will be made on the type of problems that engineers solve. Such problems will include, but will not be limited to: project designs, creation of new tools or machines that will help human beings to be more productive or efficient.

Prerequisite: Con-current enrollment in Pre-Cal I/II or higher.

Physical Science * $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 cumulative average less than 2.33 or teacher recommendation

Physics I * $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: **For the class of 2007-08**: C or better in Algebra II/Geometry Honors or B- or better in Algebra II/Geometry and cumulative average of 2.55 or better and teacher recommendation

Prerequisite: **For the class of 2008-09**: C or better in Geometry/Trig Honors or B- or better in Algebra II/Trig and cumulative average of 2.55 or better and teacher recommendation

Physics I – Honors * $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. Also available for Dual Enrollment credit.

Prerequisite: Currently enrolled in Calculus, AP Calculus, Pre-Calculus I/II, or Pre-Calculus I/II Honors, or Pre-Calculus II, and with a cumulative average of 2.75 or higher, and recommendation of teacher

Summer Enrichment Course

Forensic Sciences I Hn * $300 * Phase 3 * SUS/FBF * 2002480 [Year]

The course will focus on the various aspects of forensic science and modern criminal investigation analysis. The predominantly lab-based class will include topics in nine of the major fields of study in forensics. The topics will include: anthropology, botany, entomology, micrology, odontology, toxicology, pathology, DNA, and basic crime scene investigation techniques. Students will learn how biology, chemistry, and anatomy assist in crime scene investigations. Laboratory activities will include mock crime scenes that will provide students with opportunities to apply science in the investigation of physical evidence.

Prerequisite: B or better in Anatomy Honors and/or Chemistry Honors; GPA of 3.0 if enrolled in an honors science class, or 3.3 GPA if enrolled in a College Prep (Phase 2) science class. Current science teacher's recommendation and/or that of the department chairperson.