

# **SCIENCE HIGH SCHOOL COURSE OFFERINGS**

## **EARTH SCIENCE**

**Course Number:** SC1100, SC1200

**Prerequisites:** None

**Grade Level:** 9-12

**Credit:** ½ credit per semester (+0.5 weighted credit for Honors)

Earth Science is a study of the features and forces of the earth and its place in the solar system and the universe. This course introduces students to such topics as geology, oceanography, meteorology, and astronomy.

An accelerated course, **Honors** Earth Science is also available.

All students take the SOL test for Earth Science and must pass it to earn a verified credit toward graduation.

## **BIOLOGY I**

**Course Number:** SC2100, SC2200

**Grade Level:** 9-12

**Credit:** ½ credit per semester (+0.5 weighted credit for Honors)

Biology provides a meaningful view of the whole living world and its interrelationships. Topics such as taxonomy, morphology, physiology, molecular biology, biochemistry, genetics, ecology, and animal behavior are covered. This course will include dissections of various animals.

In the Honors level of the course, environmental education will be emphasized. The students will be required to plan, develop, and complete an experimental science project and report the results in oral and written form.

All students take the SOL test for Biology and must pass it to earn a verified credit toward graduation.

## **BIOLOGY II – GENETICS**

**Course Number:** SC2359

**Prerequisites:** Biology I

**Grade Level:** 11, 12

**Credit:** ½ credit



Biology II – Genetics includes a study of the continuity of life and heredity, cell chemistry, Mendelian laws of heredity, probability, sex-chromosomes, linkage, chromosomal mapping, quantitative inheritance, selection, chromosomal aberrations, mutations, cytoplasmic inheritance, bacterial and viral genetics, eugenics, genes in populations and genetics of species formation.

## **BIOLOGY II – ADVANCED SURVEY – MARINE BIOLOGY**

**Course Number: SC2369**

**Prerequisites:** Biology I

**Grade Level:** 11, 12

**Credit:** ½ credit



Marine Biology is the study of the oceans and life processes within and around it and includes the study of plants and animals in the ocean, ecology, and the impact of humans on the ocean. This course will also include dissections of various preserved ocean animals.

This is a paired semester class and students may enter second semester. Either semester may also be paired with any other Biology II semester course as scheduling permits.

## **BIOLOGY II – ADVANCED SURVEY – ZOOLOGY BIOLOGY II – ECOLOGY**

**Course Number: SC2379, SC2389**

**Prerequisites:** Biology I

**Grade Level:** 11, 12

**Credit:** ½ credit



Zoology is a semester course that provides the student with a survey of invertebrate and vertebrate animals. Zoology students will delve into the diversity of life by studying characteristics, taxonomic relationships, life processes, survival mechanisms, and economic importance among the organisms. This course will include dissections of various animals.

Ecology is a semester course that includes studies of the relationship between organisms and the environment, including physical and biological conditions. The course will include experimental studies in the laboratory and the field and data analysis.

These are paired semester classes and students may enter second semester. Either semester may also be paired with any other Biology II semester course as scheduling permits.

## **BIOLOGY II – ADVANCED SURVEY – FIELD BIOLOGY**

**Course Number: SC2399**

**Prerequisites:** Biology I

**Grade Level:** 11, 12

**Credit:** ½ credit



### **OFFERED ONLY AT POINT OPTION**

This is an alternative to the typical science course in the classroom setting. It allows the use of "Discovery Science" which describes natural structures of processes as accurately as possible through careful observation and data collection. Student interest and participation is far above that of a typical classroom setting. The students arrive at class eager to go out and discover something new, and then follow that up with further research when they get back to class to answer all of their questions. As one of our biology textbooks expresses it, "Science is a quest to understand nature." Being outdoors brings that quest to life. Seeing the interactions firsthand brings excitement into learning.

## H BIOLOGY II – ANATOMY AND PHYSIOLOGY

**Course Number:** SC2390

**Prerequisites:** Biology I

**Prerequisite or Co-requisite:** Chemistry I

**Grade Level:** 11, 12

**Credit:** ½ credit per semester (+0.5 weighted credit)

Anatomy and Physiology is a study of the structure and function of the human body. The course is preparation for advanced biological studies, biomedical nursing, and other science-based careers. Laboratory experiences provide student learning in the following topics: the major body systems; how the body systems work together to provide homeostasis; body functions in the healthy and diseased states; blood typing; muscle action; nerve functioning; and bioethics. Dissections of various preserved animals and organs are an integral part of this course.

## AP BIOLOGY / AP BIOLOGY LAB

**Course Number:** SC2300, SC2320

**Prerequisites:** Successful completion of Biology I & Chemistry I

**Grade Level:** 11, 12

**Credit:** 1 credit per semester (+1.0 weighted credit for AP Biology; +0.5 weighted credit for AP Biology Lab)

Advanced Placement Biology students will closely follow the program suggested by the College Board. This course emphasizes the principal topics covered in Biology I. However, it is taught at a more intensive level of rigor. Laboratory work is an integral part of the course.

Students prepare for and take the College Board's Advanced Placement Test and those who receive an acceptable score on the test may receive college credit and/or advanced standing in college.

## CHEMISTRY

**Course Number:** SC3100, SC3200

**Prerequisites:** Algebra I

**Grade Level:** 10-12

**Credit:** ½ credit per semester (+0.5 weighted credit for Honors)

Chemistry I is a course that explains the basic atomic and molecular processes. Other areas of study include the structure of matter and periodicity of elements, behavior of matter in terms of chemical equilibrium, oxidation-reduction, and acid base theory.

**Honors Chemistry** is offered with Algebra/Trig or Algebra II as a co-requisite.

All students take the SOL test for Chemistry and must pass it to earn a verified credit toward graduation.

## AP CHEMISTRY / AP CHEMISTRY LAB

**Course Number:** SC3300, SC3320

**Prerequisites:** Chemistry I and Algebra II

**Grade Level:** 11, 12

**Credit:** 1 credit per semester (+1.0 weighted credit for AP Chemistry; +0.5 weighted credit for AP Chemistry Lab)

Advanced Placement Chemistry students will closely follow the program suggested by the College Board. Students will attain a depth of understanding of fundamentals and a reasonable competence in dealing with chemical problems. Laboratory work will be required at least fifty percent of the time.

Students prepare for and take the College Board's Advanced Placement Test and those who receive an acceptable score on the test may receive college credit and/or advanced standing in college.

## **AP ENVIRONMENTAL SCIENCE**

**Course Number:** SC1300

**Co-requisites:** Chemistry, Algebra II

**Grade Level:** 11, 12

**Credit:** ½ credit per semester (+1.0 weighted credit)

Advanced Placement Environmental Science students will closely follow the program suggested by the College Board. Students will study scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, identify and analyze environmental problems both natural and human-made, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving and/or preventing them. The course is taught at an intensive level of rigor.

Students prepare for and take the College Board's Advanced Placement Test and those who receive an acceptable score on the test may receive college credit and/or advanced standing in college.

## **ADVANCED BIO-CHEMISTRY**

**Course Number:** SC2500

**Prerequisites:** One year high school Biology, one year high school Chemistry, and Algebra II

**Grade Level:** 11, 12

**Credit:** 1½ credits per semester (+1.0 weighted credit)

**Location:** New Horizons Governor's School

Biology/Chemistry is a one-year college level course offered two hours per day. Students take two separate courses. In biology, students study the fundamental characteristics of living matter from the molecular level to the vertebrate organism with comparative vertebrate dissections. In chemistry, the fundamental principles and laws of chemistry are studied. Both courses place a great deal of emphasis on laboratory work and problem solving.

## **GENERAL PHYSICS I**

**Course Number:** SC4150

**Prerequisites:** Geometry

**Grade Level:** 10-12

**Credit:** ½ credit per semester

General Physics I is a two-semester course designed for students who have successfully completed Geometry and are interested in Physics but are not ready for the math requirement of Honors Physics.

Students will develop a conceptual understanding of physical principles and how physics plays a role in their everyday lives. Topics covered will include kinematics, dynamics, energy, waves, geometric optics, electricity, and magnetism.

## **HONORS PHYSICS**

**Course Number:** SC4200

**Prerequisites:** Completion of or current enrollment in Trigonometry or Algebra II-Trigonometry

**Grade Level:** 10-12

**Credit:** ½ credit per semester (+0.5 weighted credit)

Honors physics includes a discussion of mechanics, kinetic molecular theory, heat, wave motion, sound, light, electrical and magnetism, and atomic and nuclear physics.

## AP PHYSICS

**Course Number: SC4300**

**Prerequisites:** Physics or Calculus

**Grade Level:** 11, 12

**Credit:**  $\frac{1}{2}$  credit per semester (+1.0 weighted credit)

Advanced Placement Physics students closely follow the program suggested by the College Board. The curriculum is challenging, but broad in nature. The course closely aligns with the curriculum of a typical first-year college physics course. AP Physics is a college level algebra/trigonometry based course.

Students prepare for and take the College Board's Advanced Placement Test and those who receive an acceptable score on the test may receive college credit and/or advanced standing in college.

## ADVANCED PHYSICS I

**Course Number: SC4500**

**Prerequisites:** Completion of or current enrollment in Trigonometry or Algebra II-Trigonometry

**Grade Level:** 10-12

**Credit:**  $\frac{1}{2}$  credit per semester (+1.0 weighted credit)

**Location:** New Horizons Governor's school

Physics is a one-year college level course offered two hours per day. This course is an in-depth study of classical mechanics, electric field theory, thermodynamics, and relativity, and establishes a solid foundation in physics that provides background, perspective, data analysis, and mathematical skills.

Computers are utilized in lab for data acquisitions and analysis. The course uses calculations in problem solving and derivations as well as software applications such as Interactive Physics.

The prerequisite is a strong math background in algebra and trigonometry.

## PHYSICS II

**Course Number: SC4520**

**Prerequisites:** Advanced Physics I, or AP Physics, or AP Calculus BC

**Grade Level:** 11, 12

**Credit:**  $\frac{1}{2}$  credit per semester (+1.0 weighted credit)

**Location:** New Horizons Governor's school

Physics II is a one-year college level course. This class is an in-depth study of magnetic field theory, DC circuit theory, wave motion, geometric optics, and modern physics, including quantum mechanics.

There are math concepts included in the course such as surface and line integrals in 3D space.