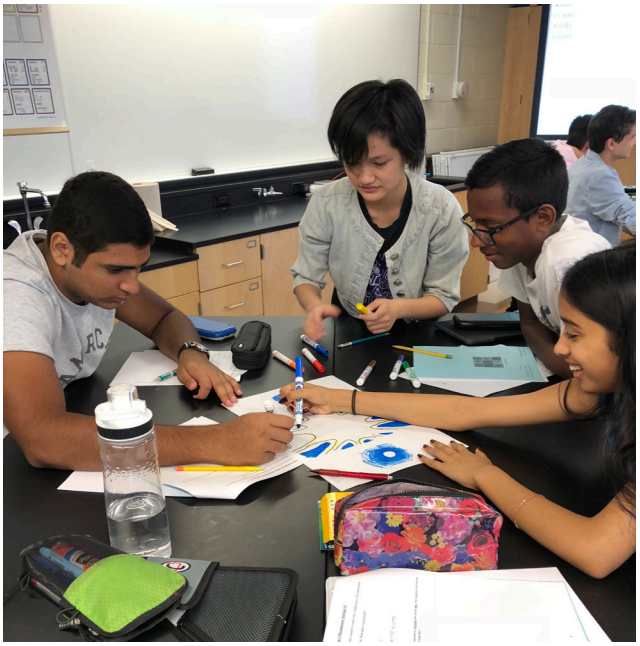


SCIENCE DIVISION

STEVE WOOD, DIRECTOR | SWOOD@D125.ORG | 847-415-4401

SCAN QR CODE TO READ MORE ABOUT SCIENCE ONLINE
WWW.D125.ORG/ACADEMIC/DIVISIONS/SCIENCE

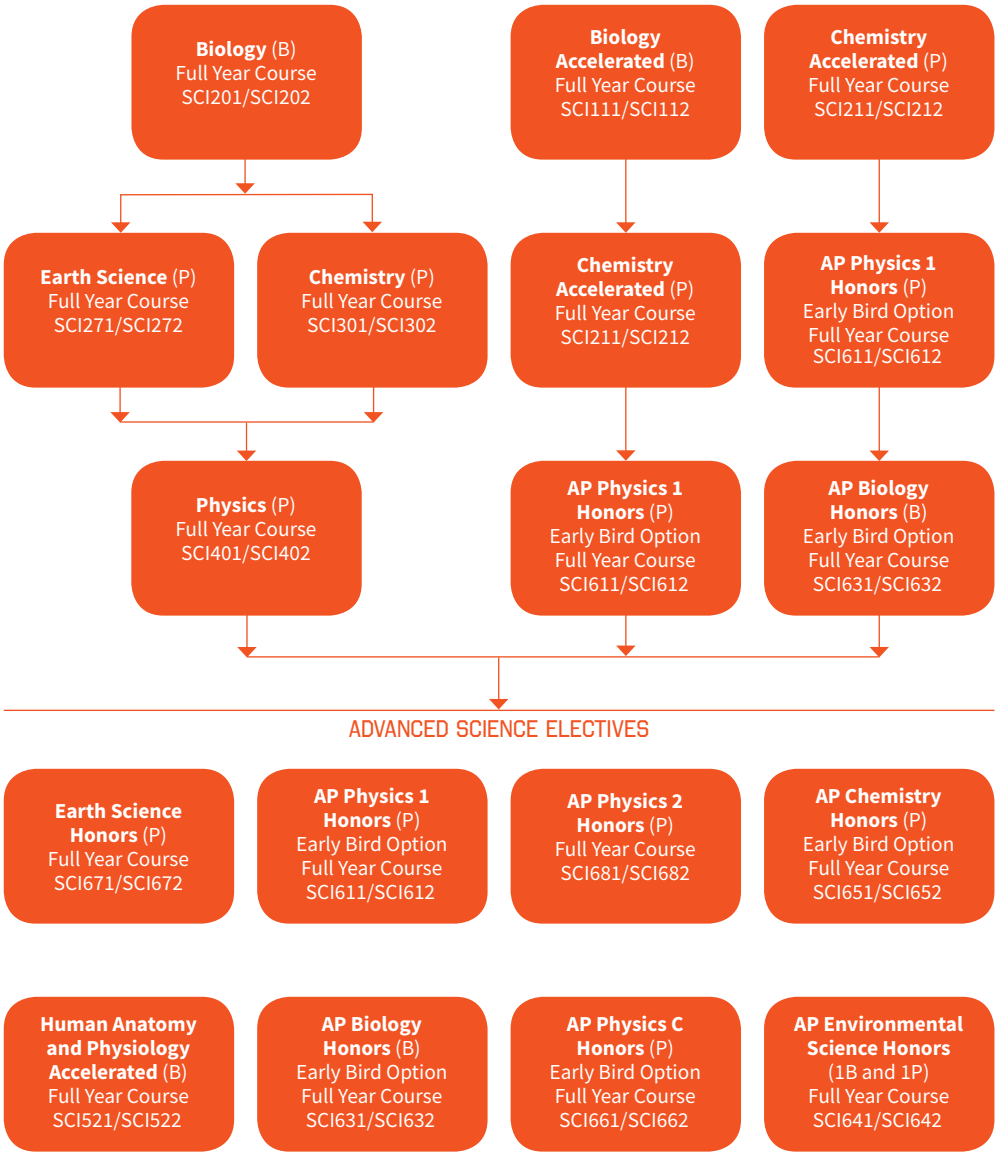
Science is as much a way of knowing as it is a body of knowledge. The Science Division at Stevenson is dedicated to a laboratory approach to science education that will involve each student in the process of discovery. This approach enables students to have practice in the kinds of analytical problem solving that will help them throughout life. Students will engage in the Science and Engineering Practices outlined in the Next Generation Science Standards (NGSS) as they engage in science. At the same time, students build an integrated information base for post-secondary studies and see the cross cutting concepts that run through all science disciplines. Courses are presently offered at three levels as indicated by the course pathway on the following page.

The graduation requirement for all students is two years of science. One year must be in the biological sciences which are indicated with a B after the course title. One year must be in the physical sciences which are indicated with a P after the course title. It is strongly recommended that all college bound students consider four years of a laboratory science.

Science Courses Required for Graduation:
Two semesters biological (B) and two semesters physical (P).

SCIENCE DIVISION COURSE OFFERINGS

WWW.D125.ORG/COURSEBOOK



KEY:
B=BIOLOGICAL SCIENCE
P=PHYSICAL SCIENCE

BIOLOGY (COLLEGE PREP B)

SCI201—SEMESTER 1
OPEN TO 9-10-11-12
SCI202—SEMESTER 2
FULL YEAR
PREREQUISITE: APPROVAL OF DIRECTOR

The topics taught in biology relate to health, nutrition, ecology, and evolution. After this course, students will understand many phenomena related to these concepts so that they may appreciate the intricacies of the human body, make informed decisions regarding their health and nutrition, and become better stewards of the earth. First semester topics include characteristics of life, atoms, photosynthesis, biochemistry, cellular respiration, carbon cycle, ecology, and human impacts. Second semester topics include diffusion and homeostasis within the body, mitosis, DNA, protein synthesis, meiosis, inheritance, and evolution. Students will engage in class discussion, conduct laboratory investigations, and produce both individual and group projects.

EARTH SCIENCE (COLLEGE PREP P)

SCI271—SEMESTER 1
OPEN TO 10-11-12
SCI272—SEMESTER 2
FULL YEAR
PREREQUISITE: BIOLOGY OR APPROVAL OF DIRECTOR

This lab-based course explores astronomy, geology, and atmospheric science. First semester topics focus on the physical world and will include geologic time, minerals, rocks, plate tectonics, earthquakes, volcanoes, and mountain building. Second semester topics will include weathering and erosion, running water, glaciers, wind, atmospheric science, and astronomy. There is an engineering component to this class.

CHEMISTRY (COLLEGE PREP P)

SCI301—SEMESTER 1
OPEN TO 10-11-12
SCI302—SEMESTER 2
FULL YEAR
PREREQUISITE: BIOLOGY (COLLEGE PREP OR ACCELERATED), OR APPROVAL OF DIRECTOR, AND THE EQUIVALENT OF ONE YEAR OF ALGEBRA

This course asks students to explore basic chemistry concepts and the impact of those concepts on real-life applications. Problem solving, critical thinking, and laboratory skills are emphasized. Major topics include: atomic theory and structure, the periodic table, chemical reactions, stoichiometry, thermochemistry, nuclear chemistry, reaction rates, equilibrium, gas laws, acids/bases, and environmental chemistry.

PHYSICS (COLLEGE PREP P)

SCI401—SEMESTER 1
OPEN TO 11-12
SCI402—SEMESTER 2
FULL YEAR
PREREQUISITE: NONE

This course instructs students how to investigate and explain daily phenomena. First semester topics include Newton's Laws, energy, and momentum and collisions. Second semester topics include the relationship between electricity and magnetism, the dual nature of light, and astronomy and the Earth. Students will engage in class discussion, perform problem analysis using algebraic concepts, conduct laboratory investigations, and produce both individual and group projects.

BIOLOGY (ACCELERATED B)

SCI111—SEMESTER 1
OPEN TO 9-10
SCI112—SEMESTER 2
FULL YEAR
PREREQUISITE: APPROVAL OF DIRECTOR

The content of this course includes cellular structure and function, biochemistry, theories of evolution, structures and functions of single-celled and multi-cellular organisms (including humans), biotechnology genetics and heredity, and human impact on Earth. The pace of this course is accelerated and material is presented in greater depth than in College Prep Biology. Students are required to work with abstract and conceptual topics. This course also emphasizes experimental design and research including statistical analysis.

CHEMISTRY (ACCELERATED P)

SCI211—SEMESTER 1
OPEN TO 9-10-11-12
SCI212—SEMESTER 2
FULL YEAR
PREREQUISITE: FRESHMAN PLACEMENT REQUIRES APPROVAL OF DIRECTOR

Chemistry Accelerated is a lab-oriented, in-depth study of the fundamental concepts of chemistry with an emphasis on observing patterns, recognizing cause and effect, and finding relationships between energy and matter. Major topics include: atomic theory and structure, the periodic table, chemical reactions, stoichiometry, thermochemistry, nuclear chemistry, reaction rates, equilibrium, and environmental chemistry.

HUMAN ANATOMY AND PHYSIOLOGY (ACCELERATED B)

SCI521—SEMESTER 1 SCI522—SEMESTER 2
OPEN TO 11-12 FULL YEAR
PREREQUISITE: BIOLOGY, CHEMISTRY AND HEALTH EDUCATION

The Human Anatomy and Physiology course emphasizes student-centered, self-directed learning that is driven by learners who excel individually and in collaboration with one another within the classroom and across multidisciplinary activities. Human Anatomy and Physiology is an excellent resource for anyone interested in pursuing a career in healthcare, wishing to improve the accuracy of their art, or for those aspiring to gain a deeper understanding of the structure and function of the human body. The course goes beyond the basic biology of human body systems as it delves into the complex relationships required to maintain homeostasis. The course focuses on student-centered learning as a means of acquiring problem solving and lifelong learning skills.

Note: *It is strongly suggested that Physics is taken prior to, or concurrently with, Human Anatomy and Physiology Accelerated.*

AP PHYSICS 1 (HONORS P)

SCI611—SEMESTER 1 SCI612—SEMESTER 2

EARLY BIRD OPTION

SCI61E1—SEMESTER 1 SCI61E2—SEMESTER 2
OPEN TO 10-11-12 FULL YEAR
RECOMMENDED: CHEMISTRY

This course covers the material typical in the first semester of an introductory physics course at a college level in preparation for the AP Physics 1 exam. It will be beneficial to students wishing to satisfy a college physical science requirement and will deal with mechanics, simple harmonic motion, waves and resistor circuits. Laboratory experiments, problem solving, and written explanations of physics concepts are emphasized in all units studied. The pace of this course is accelerated and the material is in greater depth, with more mathematical computation than in Physics. Students who enroll in this course will be prepared to take the AP Physics 1 exam in May. This class meets 1.5 periods and receives 1.5 credits for each semester.

AP PHYSICS 2 (HONORS P)

SCI681—SEMESTER 1 SCI682—SEMESTER 2
OPEN TO 11-12 FULL YEAR
PREREQUISITE: AP PHYSICS 1 OR PHYSICS (COLLEGE PREP)

This course covers the material typical in the second semester of an introductory physics course at a college level in preparation for the AP Physics 2 exam. It will be beneficial to students wishing to satisfy a college physical science requirement and will deal with optics, modern, fluids, thermodynamics, electrostatics, resistor-capacitor circuits, and electromagnetism. Laboratory experiments and problem solving are emphasized in all units studied. The pace of this course is accelerated and the material is in greater depth, with more mathematical computation than in Physics. Students who enroll in this course will be prepared to take the AP Physics 2 exam in May. This class meets one period and receives one credit for each semester.

AP BIOLOGY (HONORS B)

SCI631—SEMESTER 1 SCI632—SEMESTER 2

EARLY BIRD OPTION

SCI63E1—SEMESTER 1 SCI63E2—SEMESTER 2
OPEN TO 11-12 FULL YEAR
PREREQUISITE: CHEMISTRY AND PHYSICS (COLLEGE PREP OR ACCELERATED) OR APPROVAL OF DIRECTOR

In this course, students study advanced topics in cellular and molecular biology as recommended by the College Board. In-depth study of topics is reinforced by laboratory work. This course is most beneficial for students considering majors in science or careers in health-related fields. Students who enroll in this course will be prepared to take the AP Biology exam in May. This class meets 1.5 periods and receives 1.5 credits for each semester.

AP ENVIRONMENTAL SCIENCE (HONORS B, P)

SCI641—SEMESTER 1 SCI642—SEMESTER 2

OPEN TO 12 FULL YEAR

PREREQUISITE: BIOLOGY AND CHEMISTRY, OR APPROVAL OF DIRECTOR

This two semester course will be the equivalent of a one semester introductory college lab course in environmental science. Students will investigate the interrelationships of the natural world, analyze environmental problems, and examine alternative solutions for resolving/preventing these problems. This class meets for one period and receives one credit for each semester. Students successfully completing this course will receive one semester credit of physical science and one semester credit of biological science. Students who enroll in this course will be prepared to take the AP Environmental Science exam in May. They will also attend three field trips during the school year. There is a summer reading assignment.

AP CHEMISTRY (HONORS P)

SCI651—SEMESTER 1 SCI652—SEMESTER 2

EARLY BIRD OPTION

SCI65E1—SEMESTER 1 SCI65E2—SEMESTER 2

OPEN TO 11-12 FULL YEAR

PREREQUISITE: CHEMISTRY AND PHYSICS, OR APPROVAL OF DIRECTOR

This course covers the following areas: chemical bonding, behavior of gases, structure of matter, kinetic theory, solutions, acid base chemistry, electrochemistry, molecular geometry, thermodynamics, and equilibrium. Experiments reinforce these units; problem solving is emphasized. Students who enroll in this course will be prepared to take the AP Chemistry exam in May. This class meets 1.5 periods and receives 1.5 credits for each semester.

AP PHYSICS C (HONORS P)

SCI661—SEMESTER 1 SCI662—SEMESTER 2

EARLY BIRD OPTION

SCI66E1—SEMESTER 1 SCI66E2—SEMESTER 2

OPEN TO 10-11-12 FULL YEAR

PREREQUISITE: AP PHYSICS 1 OR AP PHYSICS 2, AND COMPLETION OR CONCURRENT ENROLLMENT IN AP CALCULUS AB OR BC, OR APPROVAL OF DIRECTOR

This course integrates calculus into the topics of physics, and covers material typical to the first year of a university-level physics course. It is strongly recommended for students wishing to pursue a career in any engineering or STEM-related field. Laboratory experiments, analytical thinking and problem solving, as well as written explanations of physics concepts are emphasized. Topics in mechanics are studied first semester, while topics in electricity and magnetism are examined second semester. Students who enroll in both semesters of this course will be prepared to take both the AP Physics C Mechanics and the AP Physics C Electricity and Magnetism exams in May. This class meets 1.5 periods and receives 1.5 credits for each semester.

EARTH SCIENCE (HONORS P)

DUAL CREDIT AVAILABLE WITH TRINITY INTERNATIONAL UNIVERSITY

SCI671—SEMESTER 1 SCI672—SEMESTER 2

OPEN TO 11-12 FULL YEAR

RECOMMENDED: BIOLOGY, CHEMISTRY, AND PHYSICS

This lab-based course covers three key areas: geology, meteorology, and astronomy. First semester topics include physical geology, plate tectonics and historical geology. Second semester topics include elements of weather, climate science, planetary science and astronomy. This course is a dual-credit, college-level science course. Classes are held at Stevenson and taught by Stevenson teachers.