

SCIENCE DIVISION

STEVE WOOD, DIRECTOR

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 analytic problem solving that will help them throughout life. At the same time, students build an integrated information base for post-secondary studies. Courses are presently offered at three levels as indicated by the sequential groupings below.

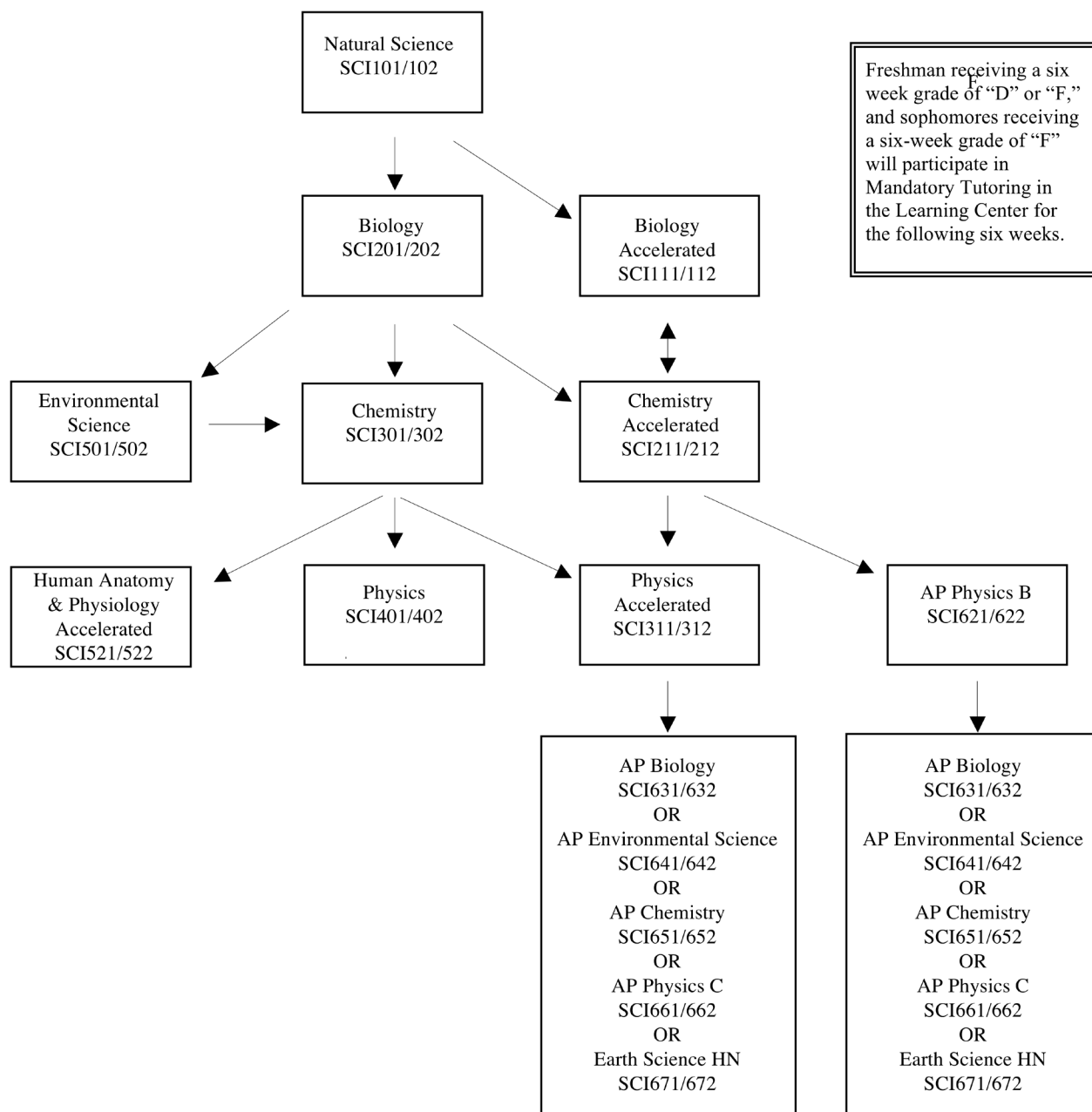
The graduation requirement for all students is two years of science. One year must be in the biological sciences which are indicated with a B after the course titles. One year must be in the physical sciences which are indicated with a P after the course titles. It is strongly recommended that all college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



Science Courses Required for Graduation: Two semesters biological, two semesters physical.



SCIENCE DIVISION SEQUENCE



Freshman receiving a six week grade of "D" or "F," and sophomores receiving a six-week grade of "F" will participate in Mandatory Tutoring in the Learning Center for the following six weeks.

1. Freshmen begin the sequence in one of three courses: Natural Science, Biology Accelerated or Chemistry Accelerated.
2. Freshman placement in Chemistry Accelerated requires Geometry Honors *and* proficiency in the Communication Arts Benchmark Assessment.
3. Biology Accelerated placement requires Mathematics Accelerated/Honors placement *and* proficiency in the Communication Arts Benchmark Assessment.

College Preparatory Sequence

Natural Science (College Prep P)

SCI101-Semester 1, SCI102-Semester 2

Open to 9

Full Year

Prerequisite: Approval of Director

This sequence includes one semester of introductory physical science and a second semester of earth science. First semester topics include measurement, introductory physics concepts, density, solubility, and phase changes. Second semester topics include mineral/rock identification, plate tectonics, earthquakes, volcanoes, a bridge building project, and astronomy. Laboratory skills are emphasized. This course prepares students to continue science courses requiring laboratory skills.

Biology (College Prep B)

SCI201-Semester 1, SCI202-Semester 2

Open to 10-11-12

Full Year

Prerequisite: Completion of Natural Science

This sequence takes a hands-on, thematic approach to the study of life. Major biological themes include homeostasis, evolution, continuity, energy, and organization. Students investigate biology through inquiry and real-life applications of the concepts.

Chemistry (College Prep P)

SCI301-Semester 1, SCI302-Semester 2

Open to 11-12

Full Year

Prerequisite: Two years of science including one year of Natural Science or recommendation of Director and the equivalent of one year of algebra

This course emphasizes basic chemistry concepts and the impact of those concepts on real-life applications. Problem solving, critical thinking and laboratory skills are emphasized. This course includes the study of measurements, classification of matter, nomenclature, stoichiometry, gas laws, atomic structure, the Periodic Table, nuclear chemistry, bonding, acids/bases and introduction to organic chemistry.

Physics (College Prep P)

SCI401-Semester 1, SCI402-Semester 2

Open to 11-12

Full Year

Prerequisite: Mathematics through Geometry C or beyond and recommendation of previous science teacher

This sequence includes the study of the mechanics of motion and the relationship of light, sound, heat, and electromagnetic waves. The techniques of class discussion and debate, problem analysis, laboratory experiments, and individual student projects are used as physics is approached from a “conceptual” point of view with an emphasis on real world applications.

Environmental Science (College Prep B, P)

SCI501-Semester 1, SCI502-Semester 2

Open to 11-12

Full Year

Prerequisite: An equivalent of one year of a physical science and one year of a biological science or approval of Director

Students successfully completing Environmental Science will receive one semester credit of biological science and one semester credit of a physical science. The first semester introduces the concepts of the environment including: ecology, population dynamics, biodiversity, biomes, and aquatic ecosystems. Second semester examines environmental problems including: resource depletion, pollution, and loss of biodiversity.

Accelerated Sequence

Biology Accelerated (Accelerated B)

SCI111-Semester 1, SCI112-Semester 2

Open to 9-10

Full Year

Prerequisite: Approval of Director

The content of this sequence includes cellular structure and function, biochemistry, theories of evolution, structure and function of one-celled organisms through complex plants and animals (including man), and genetic theory. The pace of this course is accelerated and material is presented in greater depth than in Biology. Students are required to work with abstract and conceptual topics. This course also emphasizes experimental design and research. These students may also be interested in taking a one semester Accelerated GeoScience course offered in summer school only. Students may take this summer school course prior to or immediately after their freshman year.

Chemistry Accelerated (Accelerated P)

SCI211-Semester 1, SCI212-Semester 2

Open to 9-10-11-12

Full Year

Prerequisite: Mathematics through Advanced Algebra. Freshman placement requires approval of Director.

This sequence explores the fundamental topics of chemistry in depth. Chemistry Accelerated is a lab-oriented, in-depth study of the fundamental concepts of chemistry. This course includes the study of measurement, classification of matter, chemical nomenclature, stoichiometry, gas laws, kinetic theory, atomic structure, the Periodic Table, bonding, reaction rate/equilibrium, acid/bases/salts, solutions, and an introduction to organic chemistry.

Physics Accelerated (Accelerated P)

SCI311-Semester 1, SCI312-Semester 2

Open to 11-12

Full Year

Prerequisite: Mathematics through Geometry Accelerated

This course includes the study of mechanics, wave motion, sound, light, electricity, and magnetism. 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.

Human Anatomy and Physiology Accelerated (Accelerated B)

SCI521-Semester 1, SCI522-Semester 2

Open to 11-12

Full Year

Prerequisite: Biology, Chemistry and Health Education required

This course focuses on the anatomy and physiology of the human body. Students explore the organ systems in great depth. Careers in the medical and health care fields are also investigated.

Honors Courses

Advanced Placement Physics B (Honors P)

SCI621-Semester 1, SCI622-Semester 2

Open to 10-11-12

Full Year

Prerequisite: Mathematics through Advanced Algebra or Geometry (Accelerated or Honors)

This course covers introductory physics at a college level in preparation for the Advanced Placement B, non-calculus based physics exam. It will be beneficial to students wishing to satisfy a college “physical science” requirement and will deal with mechanics, wave motion, sound, light, electricity, magnetism,

thermodynamics, modern and nuclear physics. Students are expected to write the Advanced Placement exam. This class meets 1 1/2 periods and receives 1 1/2 credits for each semester.

Advanced Placement Biology (Honors B)

SCI631-Semester 1, SCI632-Semester 2

Open to 11-12

Full Year

Prerequisite: One year of biology, chemistry, and physics at the college prep or accelerated level or approval of Director.

In this sequence, students study advanced topics in biology as recommended by the College Board. In-depth study of topics is reinforced by laboratory work and individual projects. This sequence is beneficial for students considering science, medicine, or related careers. Students are expected to write the Advanced Placement exam. This class meets 1 1/2 periods and receives 1 1/2 credits for each semester. A summer assignment must be completed prior to beginning this course.

Advanced Placement Environmental Science (Honors B, P)

SCI641-Semester 1, SCI642-Semester 2

Open to 12

Full Year

Prerequisite: One year of Biology, Chemistry, and Algebra or approval of Director

This two-semester course will be the equivalent of a one semester introductory college 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 1 period and receives 1 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 are expected to write the Advanced Placement exam and attend three field trips during the school year. A summer assignment must be completed prior to beginning this course.

Advanced Placement Chemistry (Honors P)

SCI651-Semester 1, SCI652-Semester 2

Open to 12

Full Year

Prerequisite: Completion of one year of high school chemistry and physics with mathematics through Advanced Algebra or approval of Director.

This sequence covers the following areas: chemical bonding, structure of matter, kinetic theory, solutions, acid base reactions, oxidation-reduction, electrochemistry, molecular geometry, thermodynamics, equilibrium, and an introduction to organic chemistry. Experiments reinforce these units; problem solving is emphasized. Students enrolled in this course are expected to write the Advanced Placement exam during the spring. This class meets 1 1/2 periods and receives 1 1/2 credits for each semester. Students enrolled in AP Chemistry may also be interested in taking a two-week Prep for AP Chemistry course offered in summer school only.

Advanced Placement Physics C (Honors P)

SCI661-Semester 1, SCI662-Semester 2

Open to 10-12

Full Year

Prerequisite: Completion of Physics Accelerated or AP Physics B, and completion of AB or BC Calculus, concurrent enrollment in BC Calculus course, or approval of Director

This course will incorporate the Physics C (calculus-based) curriculum into a series of engineering problem-solving situations. Students will be prepared for the AP Physics C Mechanics exam,

and the AP Physics C Electricity and Magnetism exam. Topics in 1st semester include kinematics, linear and rotational dynamics, and gravitation. Second semester topics include electricity and magnetism leading to the development of Maxwell's equations. Students are expected to write the Advanced Placement exam. This class meets 1 1/2 periods and receives 1 1/2 credits for each semester.

Earth Science (Honors P)

SCI671-Semester 1, SCI672-Semester 2

Dual Credit with College of Lake County

Open to 11-12

Full Year

Prerequisite: Completion of biology, chemistry, and physics or approval of Director

This course is a dual credit, college-level science course that is offered in collaboration with the College of Lake County. Classes are held at Stevenson High School and are taught by a Stevenson teacher. Students can earn college credit through College of Lake County, as well as Stevenson High School credit. The coursework is lab-based and covers three key areas: geology, atmospheric science, and astronomy. First semester topics focus on the structure of the Earth. Second semester will include concepts related to weather, astronomy, and planetary science.

Sheltered

Natural Science (Sheltered)

(College Prep P)

SCI11Z-Semester 1, SCI12Z-Semester 2

Open to 9

Full Year

Prerequisite: Approval of Director

This sequence includes one semester of introductory physical science and a second semester of earth science. First semester topics include measurement, density, solubility, and phase changes. Second semester topics include mineral/rock identification, plate tectonics, earthquakes, volcanoes, bridge building project, and astronomy. Laboratory skills are emphasized. This course prepares students to continue science courses requiring laboratory skills. This class will be taught by a mainstream science teacher and an ELL staff member. More personal attention will be given to each student because of smaller class enrollment. Emphasis will be placed on vocabulary development.

Biology (Sheltered)

(College Prep B)

SCI21Z-Semester 1, SCI22Z-Semester 2

Open to 10-11-12

Full Year

Prerequisite: Completion of Natural Science

This sequence takes a hands-on thematic approach to the study of life. Major biological themes include homeostasis, evolution, continuity, energy, and organization. Students investigate biology through inquiry and real-life applications of the concepts. This class will be taught by a mainstream biology teacher and an ELL staff member. More personal attention will be given to each student because of smaller class enrollment. Additional emphasis will be placed on science vocabulary development.