

Science Courses- RBHS

Physical Science

Grades 9, 10 1 unit

This course is a survey of the principal concepts of chemistry and physics. Laboratory investigations and hands on activities are an integral part of this course. Chemistry units include: acids and bases, atomic structure, states of matter, bonding and reactions, and nuclear chemistry. Physics units include: motion, forces, conservation of energy, and electricity. The course is based on the 2014 South Carolina Academic Standards and Performance Indicators for Science.

Biology 1

Grade 9 1 unit Grade 10 1 unit CHE lab credit

This course covers the major concept areas of biological science including: the cell; molecular basis of heredity; biological change; diversity in living systems; and environmental relationships. The student develops an understanding and appreciation of all living things and their critical relationship with one another. Laboratory investigations that address the biology inquiry standard are an essential aspect of this course. (All of the South Carolina Academic Standards and Performance Indicators for Science are addressed.)

Biology 1 Honors

Grade 9 1 unit CHE lab credit

Within the framework of development from simplest to the most complex, the unique structures, processes, and organization of life forms are treated in-depth through the study of cells; genetics; biological change and diversity of life; matter, energy, and organization in living systems; and the interrelationship between organisms and the environment. This course serves as a foundation for the student interested in pursuing AP Biology 2. Extensive laboratory investigations are an integral part of this course. Independent and group investigations and research are conducted throughout the course. (All of the South Carolina Academic Standards and Performance Indicators for Science are addressed.)

Biology 2

Grades 11, 12 1 unit CHE lab credit Prerequisite: Biology 1

This course is designed to prepare students for many collegelevel Biology courses. It is taught in a hands-on, real-world manner. The concepts of this

course include: the environment and current environmental issues, animal behavior, plants, evolution, and classification with a specific focus on each of the kingdoms. Biology 2 also includes animal anatomy and physiology through the use of dissections.

Advanced Placement Biology

Grades 10–12 1 unit CHE lab credit Prerequisite: Biology 1

Requirement: AP Biology Exam, Biology Extension Honors linked course

Recommended: Chemistry 1 (completed), a 55/550 on the verbal section of the PSAT/SAT or 25 on the PLAN/ACT verbal

This course is a second year of intensive biology designed to prepare students to take the Advanced Placement Biology Examination. The course meets the objective of a general biology course at the college level. The College Board determines the course description (including dissection); therefore, the content of this course must adhere to those requirements. This course is linked to a required one-unit honors course.

AP Biology Preparation Lab Honors Grades 10–12 1 unit This course is a required link to Advanced Placement Biology and is only open to those students enrolled in that course.

Marine Science

Grades 10–12 1 unit CHE lab credit Grades 11–12 Prerequisite: Biology 1

This course is for students with an interest in science and/ or may be considering a career in environmental or marine science. Lab, classroom work and independent research are required for an in-depth study of: land, marine and coastal ecosystems; plant and animal life; and ecological principles. The course integrates current events and topics in marine and environmental science with textbook information. A required dissection of a marine organism enhances the study of these unique animals.

Advanced Placement Environmental Science

Grades 11, 12 1 unit CHE lab credit Prerequisite: Biology 1, Chemistry 1

Requirement: AP Environmental Science Exam,

This course is designed to be the equivalent of a one-semester introductory college course in environmental science. The goal of the course is to provide students with scientific principle, 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. The College Board determines the course description; therefore, the content of this course must adhere to those requirements.

Anatomy and Physiology

Grades 11, 12 1 unit CHE lab credit Prerequisite: Biology 1

Recommended: Grade of 85 or better in Biology 1

This course is designed to extend the learning in Biology 1 for students interested in possible health and medical careers. The content applies to the human body and the molecular and cellular bases of organisms as taught in Biology 1. The content provides knowledge of individual functioning units of the body and how they complement the whole body organism. Students attain a working vocabulary of medical terminology. Laboratory investigations are a routine portion of the class.

Chemistry 1

Grades 10–12 1 unit CHE lab credit Prerequisite: Biology 1, Algebra 1 (non-concurrent)

Recommended: Grade of 80 or better in Algebra I

This course deals with the nature and structure of matter, the periodic system, chemical reactions, balancing equations, mathematics of chemistry, gases, solutions and solubility, calorimetry and acid-base relationships. (Emphasis is placed on problem solving. Laboratory activities that address the course inquiry standards are coordinated with and enhance the course content based on the South Carolina Academic Standards and Performance Indicators for Science 2014.)

Chemistry 1 Honors

Grades 10–12 1 unit CHE lab credit Prerequisite: Biology 1, Algebra 2

Recommended: Grade of 85 or better in math courses

This course is an in-depth study of the chemical principles described in Chemistry 1 with emphasis placed on chemical calculations. Appropriate laboratory activities that address the course inquiry standards are coordinated with the course content based on the South Carolina Academic Standards and Performance Indicators for Science.

Chemistry 2

Grades 11, 12 1 unit CHE lab credit Prerequisite: Chemistry 1, Algebra 2

Recommended: Grade of 80 or better in math and science courses

This course is an in-depth study of chemical principles with appropriate laboratory activities enhancing the content. Mathematical skills are essential. The course expands on Chemistry 1 Theory and covers such new topics as thermodynamics, equilibrium and electrochemistry. Emphasis is placed on problem solving and critical thinking.

Advanced Placement Chemistry

Grades 11, 12 1 unit CHE lab credit Prerequisite: Chemistry 1, Algebra 2

Requirement: AP Chemistry Exam, Chemistry 2 Extension Honors linked course

Recommended: Grade of 85 or better in math and Chemistry 1, a 60/600 on the math section of the PSAT/SAT or 27 on the ACT math

This course is a second year of intensive chemistry designed to prepare the student to take the Advanced Placement Chemistry Examination. The course meets the objective of a general chemistry course at the college level. The College Board determines the course description; therefore, the content of this course must adhere to those requirements. This course is linked to a required one-unit honors course.

AP Chemistry Preparation Lab Honors Grades 11, 12 1 unit

This course is linked to Advanced Placement Chemistry 2 and is open only to students enrolled in that course.

Physics

Grades 11, 12 1 unit CHE lab credit Prerequisite: Biology 1, Algebra 2, Geometry

Recommended: Grade of 85 or better in Algebra 2, PreCalculus (completed or concurrent)

This is a mathematical science course covering the classical and modern topics in physics. Appropriate laboratory activities that address the course inquiry standards are coordinated with the course content so that students grasp the experimental nature of science. Topics include measurement, mechanics, wave motion, sound, light, optics, color, thermodynamics, electricity and electromagnetism, and relativity.

Physics Honors

Grades 11, 12 1 unit CHE lab credit Prerequisite: Biology 1, Pre-Calculus (completed or concurrent)

Recommended: Grade of 85 or better in Algebra 2

This course offers an in-depth study of the physics principles with emphasis placed on mathematical computation. Where appropriate, calculus methods are used to solve problems. Laboratory activities that address the course inquiry standards are coordinated with the course content so students can grasp the experimental nature of science. Topics include measurement, mechanics, torque, rotary motion, wave motion, sound, light, optics, electricity and electromagnetism, and relativity.

Advanced Placement Physics 1

Grades 11-12 1 unit CHE lab credit

Prerequisite: Pre-Calculus (completed or concurrent)

Requirement: AP Physics 1 Exam

AP Physics 1 is the equivalent of a first-semester college course in algebra-based physics. It is designed to enable AP students to develop deep understanding of the content and to focus on applying their knowledge through inquiry labs. The full course also allows time for inclusion of physics content specified by state standards. The course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy, and power; mechanical waves and sound. It also introduces electric circuits.

Advanced Placement Physics C Mechanics

Grade 12 1 unit CHE lab credit Prerequisite: Physics Honors or AP Physics 1, AP Calculus (completed or concurrent)

Requirement: AP Physics C Mechanics Exam

Recommended: A 60/600 on the math portion of the PSAT/SAT or 27 on the ACT math

This course focuses on mechanics with calculus being used in problem solving and in derivations. Laboratory experience is an integral part of the course. This course is appropriate for students who are planning to major in science or engineering at the college level. The College Board determines the course description; therefore, the content of this course must adhere to those requirements.

Advanced Placement Physics C Electricity & Magnetism

Grade 12 1 unit CHE lab credit

Prerequisite: Physics Honors or AP Physics 1, AP Calculus (completed or concurrent)

Requirement: AP Physics C Electricity & Magnetism Exam

Recommended: A 60/600 on the math portion of the PSAT/SAT or 27 on the ACT math

This course focuses on classical electricity and magnetism with calculus being used in problem solving and in derivations. Laboratory experience is an integral part of the course. This course is appropriate for students who are planning to major in science or engineering at the college level. The College Board determines the course description; therefore, the content of this course must adhere to those requirements.

Earth Science

Grades 10–12 1 unit CHE lab credit

This course is designed to meet the SC Earth Science Academic Standards related to geology, paleontology, biogeochemical cycles, weather and climate, and astronomy. The overall approach shows how these systems function and interrelate with each other. Students examine the nature of Earth's composition, processes and place in the universe in order to tie in their relevance to local and global issues. Scientific method and inquiry are used as the student studies issues related to Earth as home.