

SCIENCE PROGRAM

District 200 high schools consider scientific thinking to be one of the cornerstones of a quality education. Understanding the scientific process, practicing experimentation, recording observations, and evaluating results are fundamental skills that provide a broad understanding of science and its impact on our society. The preferred sequence is Biology, Chemistry, and Physics.

9 th Grade	10 th Grade	11 th Grade	12 th Grade
Chemistry (A)	*Physics (A)	AP Science Elective (A)	AP Science Elective (A)
Biology (I, A)	*Chemistry (I, A)	*Physics (I, A)	AP Science Elective (A) Science Elective (I)

*10th – 12th grade students can concurrently take a science elective. Please see course descriptions for details.

ADVANCED PLACEMENT BIOLOGY (A)

Length: Two Semesters

Grades: 11, 12

Prerequisite: Biology, Chemistry, Physics or concurrent Physics

Qualifies for: Applied Technology Credit

This course is subject to a consumable fee.

Advanced Placement Biology is intended for students who are considering a major in biology, biotechnology or the health fields. The course includes content from three general areas: molecules and cells, heredity and evolution, and organisms and populations. Advanced Placement Biology is designed to be the equivalent of a college introductory biology course taken by biology majors.

Advanced Placement Chemistry is the equivalent of a first year college chemistry course. It is a rigorous laboratory-based course that includes topics such as the structure of matter, chemical reactions, energy, kinetics, equilibrium and electrochemistry.

Students should be prepared to do hands-on laboratory activities, complete daily homework, work cooperatively with others, use scientific reasoning and problem solving. There is an emphasis on independent thinking.

ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE (A)

Length: Two Semesters

Grades: 11, 12

Prerequisite: Biology, Chemistry, Physics or concurrent Physics, and Algebra

This course is subject to a consumable fee.

The AP Environmental Science course is designed to be the equivalent of a one-semester, introductory college course in environmental science. It is intended to enable students to undertake, as first-year college students, a more

ADVANCED PLACEMENT CHEMISTRY (A)

Length: Two Semesters

Grades: 11, 12

Prerequisite: Chemistry, Physics and Algebra 2 & Trig, concurrent enrollment in Precalculus

Qualifies for: Applied Technology Credit

This course is subject to a consumable fee.

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advanced study of topics in environmental science. This course will provide students with the scientific principles, 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 or preventing them.

ADVANCED PLACEMENT PHYSICS C (A)

Length: Two Semesters

Grades: 11, 12

Prerequisite: Biology, Chemistry, Physics, Calculus, Concurrent Registration in Calculus or Teacher Recommendation

Qualifies for: Applied Technology Credit

This course is subject to a consumable fee.

Advanced Placement Physics C ordinarily forms the first part of the college sequence that serves as the foundation in physics for students majoring in the physical sciences or engineering. The sequence is parallel to or preceded by mathematics courses that include calculus. Methods of calculus are used wherever appropriate in formulating physical principles and in applying them to physical problems. Strong emphasis is placed on solving a variety of challenging problems, some requiring calculus.

ASTRONOMY (I)

Length: One Semester

Grades: 10, 11, 12

Prerequisite: Biology, Chemistry, Physics or concurrent Physics, Algebra I

This course is subject to a consumable fee.

Astronomy is designed to explain and enhance understanding of the physical properties of the universe, with particular emphasis on our solar system, our galaxy, and our ability to use observational techniques and equipment to explore planets, stars, and other celestial objects and phenomenon. Topics include the historical development of astronomy, the structure, position, and motion of objects within the universe, the life-cycle of celestial objects, and the question of life within the universe.

BIOLOGY (A)

Length: Two Semesters

Grade: 9

Prerequisite: Teacher recommendation

This course is subject to a consumable fee.

Advanced level Biology is a rigorous, college prep course targeted for students that are motivated, can work independently and consistently complete all class assignments. The focus in this lab-based class will include developing higher order thinking skills through activities that focus on the interface of science, technology, and society. Topics include the interaction of humans and other biota within the biosphere, the chemical nature of life, the cellular composition of all-living things, energetics, and biotechnology. We will also explore the scientific theories on the diversification of life, nature of heredity, and human systems. Students should be prepared for accelerated, in-depth content learning in addition to extensive reading, individual and group projects, and writing. Communication skills are emphasized.

BIOLOGY (I)

Length: Two Semesters

Grade: 9

Prerequisite: None

This course is subject to a consumable fee.

Biology includes an in-depth study of the scientific way of knowing and the definition of "life" from a scientific vantage point. Topics include the chemical nature of life, the cellular composition of all-living things, genetics, ecology, biotechnology, the role of energy in ecosystems, scientific theories on the diversification of life, classification of organisms, human systems, and the interaction of humans and other biota within the biosphere. Students should be prepared for daily assignments including significant reading, projects, and writing.

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CHEMISTRY (A)

Length: Two Semesters

Grades: 9, 10, 11, 12

Prerequisite: Algebra 1, concurrent enrollment in Algebra 2 & Trigonometry

This course is subject to a consumable fee.

Chemistry A level is a rigorous laboratory-based course that includes topics such as the structure of matter, chemical reactions, energy, and equilibrium. Students should be prepared to do hands-on laboratory activities, complete daily homework, work cooperatively with others, use scientific reasoning, and problem solving. This course covers each topic in more depth, at a faster pace than Chemistry I level and incorporates a higher level of mathematical skill.

CHEMISTRY (I)

Length: Two Semesters

Grades: 10, 11, 12

Prerequisites: Algebra 1

This course is subject to a consumable fee.

Chemistry I level is a laboratory-based course that includes topics such as the structure of matter, chemical reactions, and energy. Major topics covered include: the structure of matter, chemical change and chemical reactions, energy, and acid/base interactions. Students will utilize learning approaches that include hands-on work, reading strategies, and written expression. Students should be prepared to do hands-on laboratory activities, complete daily homework, work cooperatively with others, and use scientific reasoning and problem solving.

ENVIRONMENTAL BIOLOGY (I)

Length: Two Semesters

Grades: 11, 12

Prerequisite: Biology, Chemistry, Physics or concurrent Physics

This course is subject to a consumable fee.

Environmental Biology is a second year biology course designed for juniors and seniors who wish to investigate both local and global environmental issues. The principle goal is to facilitate the development of a literate

environmental citizen capable of making informed decisions regarding the environment. Traditional book work is combined with weekly field studies and data collection with an emphasis on problem solving and critical thinking. During first semester, students investigate the plants, animals, and water ecology of local ecosystems. Second semester students explore global issues such as world population, biodiversity, pollution, and mankind's relation to the environment.

FOOD SCIENCE (I)

Length: One Semester

Grades: 11, 12

Prerequisite: Biology, Chemistry, Physics or concurrent Physics

Qualifies for: Science or Elective Credit

This course is subject to a consumable fee.

Food Science includes the science of the production, processing, preparation, evaluation, and utilization of food. Students use scientific methods to conduct laboratory experiments. Emphasis is on laboratory experiments that develop understanding of how basic biology, chemistry, physics, physiology, and technology affect the foods we eat.

FORENSIC SCIENCE (I)

Length: One Semester

Grades: 11, 12

Prerequisite: Biology, Chemistry, Physics or concurrent Physics

This course is subject to a consumable fee.

Forensic Science is the application of scientific methods using principles from Biology, Chemistry, and Physics in crime investigations. This course is lab-based and may include the following themes of study: crime scene evidence, forensic anthropology, toxicology, trace evidence, DNA, fingerprints, impression evidence, analysis of glass, serology. Forensic Science teaches basic knowledge of proper crime scene procedures and evidence processing.

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GEOLOGY (I)

Length: One Semester

Grades: 10, 11, 12

Prerequisite: Biology, Chemistry, Physics or concurrent Physics

This course is subject to a consumable fee.

Geology introduces students to the fundamentals of the Earth's composition and physical character. Topics include landforms and their evolution, plate tectonics, the fossil record, and the physical properties and composition of rocks and minerals. Atmospheric dynamics such as wind, rain, heat, and climate are also covered extensively, including laboratory experiences designed to measure heat, motion, force, and porosity.

HUMAN ANATOMY AND PHYSIOLOGY (I)

Length: One Semester

Grades: 11, 12

Prerequisite: Biology, Chemistry, Physics or concurrent Physics

This course is subject to a consumable fee.

Human Anatomy and Physiology explores the systems comprising the human body by examining physiological mechanisms and developing a thorough understanding of human anatomy. An emphasis is placed on the interrelatedness of such systems as the skeletal, muscular, nervous, and circulatory systems, and may include other body systems as well. Additional topics will include medical terminology, basic chemistry, and cell and tissue structure. This course is recommended for those considering the pursuit of a career in the health service field. Careers in the medical and health care fields will also be investigated. Dissection will be a required component of several of the units of study.

PHYSICS (A)

Length: Two Semesters

Grades: 10, 11, 12

Prerequisite: Algebra 2 & Trigonometry, concurrent enrollment in Precalculus or teacher recommendation

This course is subject to a consumable fee.

Physics A level provides a background in the physical laws that describe our universe. Areas of

study include motion, forces, electricity, magnetism and various storage modes and transfer mechanisms of energy. This course relies heavily on laboratory experimentation and mathematical modeling.

PHYSICS (I)

Length: Two Semesters

Grades: 10, 11, 12

Prerequisite: Geometry

Recommended Prerequisite: Concurrent enrollment in Algebra 2 Trigonometry or higher.
This course is subject to a consumable fee.

Physics I level, is designed for college-bound students. It gives students an understanding of major concepts of physics in a laboratory setting. An understanding of algebra is required to solve problems presented in this course. Topics include: forces, motion, electricity and various storage modes and transfer mechanisms of energy.