

Science

Physics I (3084) [PHYS I]

Grade 9

Term Length 2

Credit 2

Prerequisite: Algebra I or Algebra I concurrent

This course is geared to produce a basic understanding of the physical phenomena we encounter on a daily basis. A strong background in math is necessary. Physics is an academic class. Techniques used include: lectures, demonstrations, laboratory experimentation, outside projects and field trips.

Qualifies as a quantitative reasoning course.

Chemistry I (3064) [CHEM I]

Grade 10-12

Term Length 2

Credit 2

Prerequisites: Algebra I

This course emphasizes the basic concepts of chemistry. Students will develop models of the structure of matter and its chemical reactions using appropriate laboratory investigations. Proper, safe laboratory techniques will be utilized. Topics covered include: properties of matter, nature of chemical change, structure of matter, nature of energy and change, history of chemistry and careers in chemistry.

Qualifies as a quantitative reasoning course.

Biology I (3024) [BIO I]

Grade 10-12

Term Length 2

Credit 2

Prerequisites: Physics I and Chemistry I

Subject areas to be covered comply with those of the State Standards, which are: molecules and cells, developmental and organismal biology, genetics, evolution, and ecology. Also to be discussed during the coverage of these areas are the nature of science and technology, scientific thinking, the mathematical world, and common themes.

Biology I – Honors (3024) [BIO I Hon]

Grade 10-12

Term Length 2

Credit 2 weighted

Prerequisites: Physics I and Chemistry I. It is recommended that the student have a minimum of a B average in previous science courses.

The subject areas to be covered comply with the State Standards, which are: molecules and cells, developmental and organismal biology, genetics, evolution, and ecology. Also to be discussed during the covering of these topics are: the nature of science and technology, scientific thinking, the mathematical world and common themes.

The students will be required to complete a long term project involving plant growth, projects such as watching changes in a mini ecosystem, and a paper on Charles Darwin that discusses the topics covered in Historical Perspectives of Biology of the State Standards. Prepare a formal lab report and presentation of information.

Chemistry II (3066) [CHEM II]

Grade 11-12

Term Length 2

Credit 2 weighted

Prerequisites: Chemistry I, Algebra II or Algebra II concurrent

This course provides extensive laboratory investigations of matter in living and nonliving materials. The concepts covered include: organic chemistry, biochemistry, unifying themes of chemistry, scientific inquiry, qualitative and quantitative analysis and the physical and mathematical models of matter.

Qualifies as a quantitative reasoning course.

Integrated Chemistry/Physics (3108) [ICP]

Grade 9-10

Term Length 2

Credit 2

Prerequisites: Algebra I or Algebra I concurrent

This course is a laboratory-based introduction to chemistry and physics. A basic understanding of algebra is required for the course. The concepts covered include: scientific inquiry, atomic structure, chemical reactions, formulas, forces, motion, and interactions between matter and energy.

Earth and Space Science I (3044) [EAS SCI I]

Grade 10-12

Term Length 2

Credit 2

Earth and Space Science I affords an overview of the four branches of earth and space science (astronomy, meteorology, geology, and oceanography). The course emphasizes the study of physical and historical geology, as well as the history and development of meteorology. Environmental issues and career opportunities related to the earth are also explored.

Advanced Science, Special Topics: (Astronomy) (3092) [ADV SCI ASTRO]

Grade 10-12

Term Length 1

Credit 1

Prerequisite: One year of Core 40 and AHD science course work.

Earth and Space Science, astronomy, allows students to review the make-up of the universe and man's role in its investigation. Students will have opportunities to: (1) gain an understanding of how the astronomer collects and utilizes data, (2) categorize the universe and its interactions, (3) verify the sun's importance as it pertains to the continued existence of the solar system, and (4) discuss the properties and features of the solar system.

Advanced Science, Special Topics: (Oceanography) (3092) [ADV SCI OCEAN]

Grade 10-12

Term Length 1

Credit 1

Prerequisite: One year of Core 40 and AHD science course work.

Students will examine the ocean from a prospective of creating and maintaining healthy oceans. Topics discussed will include marine animals and overfishing, ocean currents and their affect on the world climates, environmental issues, such as the rising ocean temperatures, coral bleaching, and toxic waste. Students will also explore the processes that shape the ocean floor and the habitats that different topographic features create for marine life.

Advanced Life Science, (Animal) (5070) [ALS ANIML]

Grade 10-12

Term Length 2

Credit 2

Prerequisite: Biology or Chemistry

This is a standards-based, interdisciplinary science course that integrates biology, chemistry, and microbiology in an agricultural context. Students enrolled in this course formulate, design, and carry out animal based laboratory and field investigations as an essential course component. Students investigate key concepts that enable them to understand animal growth, development and physiology as it pertains to agricultural science. This course stresses the unifying themes of both biology and chemistry as students work with concepts associated with animal taxonomy, life at the cellular level, organ systems, genetics, evolution, ecology, and historical and current issues in animal agriculture. Students completing this course will be able to apply the principles of scientific inquiry to solve problems related to biology and chemistry in highly advanced agricultural applications of animal development.

****Fulfills a Life Science requirement***

Advanced Life Science, (Foods) (5072) [ALS FOODS]

Grade 10-12

Term Length 2

Credit 2

Prerequisites: Food Science, Biology or Chemistry

Advanced Life Science, Foods, is a standards-based, interdisciplinary science course that integrates biology, chemistry, and microbiology in an agricultural context. Students enrolled in this course formulate, design, and carry out food based laboratory and field investigations as an essential course component.

Students understand how biology, chemistry, and physics principles apply to the composition of foods, food nutrition and development, food processing, and storage. Students completing this course will be able to apply the principles of scientific inquiry to solve problems related to biology, physics and chemistry the context of highly advanced agricultural applications of food.

****Fulfills a Life Science requirement***

Advanced Science, Special Topics (3092) [ADV SCI ST]

Grade 10-12

Term Length 2

Credit 2

Prerequisite: One year of Core 40 and AHD science course work and permission of the teacher.

Advanced Life Science, Special Topics is any science course which is grounded in extended laboratory, field, and literature investigations into one or more specialized science disciplines, such as anatomy/physiology, astronomy, biochemistry, botany, ecology, electromagnetism, genetics, geology, nuclear physics, organic chemistry, etc. Students enrolled in this course engage in an in-depth study of the application of science concepts, principles, and unifying themes that are unique to that particular science discipline and that address specific technological, environmental or health-related issues. Under the direction of a science advisor, students enrolled in this course will complete an end-of-course project and presentation, such as a scientific research paper or science fair project, integrating knowledge, skills, and concepts from the student's course of study. Individual projects are preferred, but group projects may be appropriate if each student in the group has specific and unique responsibilities.

Earth and Space Science II (3046) [EAS SCI II]

Grade 11-12

Term Length 2

Credit 2

Prerequisites: Earth and Space Science I

Earth and Space Science II is an extended laboratory, field, and literature investigations-based course whereby students apply concepts from other scientific disciplines in synthesizing theoretical models of earth and its interactions with the macrocosm. Students enrolled in this course examine various earth and space science phenomena, such as the structure, composition, and interconnected systems of earth and the

various processes that shape it, as well as earth's lithosphere, atmosphere, hydrosphere, and celestial environment. Students analyze and apply the unifying themes of earth and space science as part of scientific inquiry aimed at investigating earth and space science problems related to personal needs and community issues.

Environmental Science (3010) [ENVSCI]

Grade 11-12

Term Length 2

Credit 2

Prerequisite: One year of Core 40 and AHD science course work and permission of the teacher.

Environmental Science is an interdisciplinary course that integrates biology, earth science, chemistry, and other disciplines. Students enrolled in this course conduct in-depth scientific studies of ecosystems, population dynamics, resource management, and environmental consequences of natural and anthropogenic processes. Students formulate, design, and carry out laboratory and field investigations as an essential course component. Students completing Environmental Science, acquire the essential tools for understanding the complexities of national and global environmental systems.

Physics II (3086) [PHYS II]

Grade 11-12

Term Length 2

Credit 2

Prerequisites: Physics I and approval from Instructor

Physics II is an extended laboratory, field, and literature investigations-based course. Students enrolled in Physics II investigate physical phenomena and the theoretical models that are useful in understanding the interacting systems of the macro- and microcosms. Students extensively explore the unifying themes of physics, including such topics and applications of physics as mechanics, wave motion, electricity, magnetism, electromagnetism, atomic and nuclear physics, and thermodynamics, etc., in laboratory activities aimed at investigating physics questions and problems concerning personal needs and community issues related to physics.

Qualifies as a quantitative reasoning course.