

COURSE DESCRIPTIONS

SCIENCE

Earth Science

Required for Grade 9

Full Year

1 Credit

This class will provide students with scientific knowledge and experience from the Earth and Space Sciences in real-world contexts. The goal of this interdisciplinary course is for students to develop an understanding of the earth and the solar system as a set of closely coupled systems that can be useful in explaining natural phenomena and making decisions about real-world problems. Units covered include Astronomy, Plate Tectonics, Seismology, Volcanology, Mineralogy, Paleontology, Glaciology, Meteorology and Oceanography. Objectives for this course have been selected from the Michigan Department of Education's High School Science content expectations.

Honors Earth Science

Teacher Recommendation

Grade 9

Full Year

1 Credit

This class provides students with scientific knowledge and experiences from the Earth & Space Sciences in real-world contexts but will explore the high school Science Context expectations to a greater depth than the regular Earth Science course. The goal of this interdisciplinary course is for students to develop an understanding of the earth and the solar system as a set of closely coupled systems that can be useful in explaining natural phenomena and making decisions about real-world problems. Units covered include Astronomy, Plate Tectonics, Seismology, Volcanology, Mineralogy, Paleontology, Glaciology, Meteorology and Oceanography. Objectives for this course have been selected from the Michigan Department of Education's High School Science content expectations

Environmental Science

*Recommended for 10th-12th Grade

Full Year

1 Credit

Environmental Science is the study of the natural environment and the interdependence of all life forms. Students will gain a better understanding of the environment including the dependence of human life on the finite resources of the planet through a combination of interdisciplinary lessons and hands-on experiences. Emphasis will be placed upon natural biomes, biological diversity, local ecosystems, current environmental issues, and sustainable conservation practices.

Plant Science

Recommended for grades: 10-12

Full Year

1 Credit

Plant Science is designed to give students a good understanding of plants and their importance to all ecosystems. It meets one of the required science credits for graduation. Major units of study: cells; parts and functions; plant parts & their functions; plant propagation, forestry, soils, greenhouse management & use; integrated pest management; landscaping; bedding plants; vegetable gardening; fruit production; field crops; pesticides; hydroponics; forage crops and house plants.

Animal Science

Recommended for grades: 10-12

Full Year

1 Credit

Animal Science is designed to introduce students to how animals grow and develop and the different systems that affect this growth and development. The major focus is on agricultural animals with some attention on wildlife. This class does meet 1 credit of science toward graduation requirements. Major areas of study include cells-parts & functions; systems-parts & functions; classification & nomenclature, aquaculture' poultry; dairy; beef; swine; sheep/goats; honey bees; rabbits, wildlife, and companion animals.

NOTE: Students who complete both Animal science AND Plant science (in separate years) will receive two credits toward graduation and fulfill the biology requirement. If a student completes Animal science OR Plant science it would fulfill ½ of the Biology requirement.

Biology

9th & 10th grade

Full Year

1 Credit

Biology is the study of life. This Biology course is a survey course, which incorporates new perspectives and understanding across the major sub-disciplines of biology. Genetics, cell biology, development, evolution, classification, animals and human body systems are some of the areas covered. We will examine the human role in the world of living things in relation to contemporary problems. The course will have a lab-based, hands-on component. Understanding through exploration is one goal of this course. Students will be sensitized to various moral and environmental issues brought about by research in bioengineering and other areas of biological research. They will be provided with tools with which to make educated decisions regarding these new technologies and developments. This class promotes scientific thinking through problem solving, a process that encourages curiosity and careful inquiry.

Honors Biology

**Prerequisite Recommendation by 8th grade Science & Algebra I teachers
9th & 10th grade**

**Full Year
1 Credit**

Same as Biology with emphasis on preparing students for Advanced Biology and Advanced Placement Biology.

Chemistry

**Prerequisite Algebra I
Recommended for Grades: 11-12**

**Full Year
1 Credit**

This course is a lab-intensive hands-on application of many general chemistry concepts. Topics for this course will include periodic law and bonding, stoichiometry (balancing equations and using a mass/mole concept to figure chemical products), gas laws, solutions, redox reactions, Thermo chemistry and acid/base reactions. The course is designed to prepare students for entry-level college chemistry courses and provide students with an analytical lab experience. Pre-required courses include a good understanding and mastery of the concepts taught in Algebra.

Honors Chemistry

Teacher Recommendation

**Full Year
1 Credit**

In addition to general chemistry requirements, Honor's chemistry topics will include equilibrium, chemical kinetics and some organic chemistry. Honor's chemistry students will have an increased homework load and an accelerated schedule for general chemistry topics

Advanced Placement Chemistry

**Prerequisite Algebra I, Algebra II, Geometry, Chemistry
Recommended for Grades: 12**

**Full Year
1 Credit**

Students opting for this course will need to understand that it is designed to cover the same topics that a first year general inorganic Chemistry course at most colleges and universities will cover. Tests and labs will be of the same nature that would be found in most colleges. Students will also enter into an agreement that it will be expected that to complete this course, the Advanced Placement examination will be taken in May to determine their placement and credit for college Chemistry courses.

Prerequisites for the course will include Algebra and Geometry concepts and a superior understanding of a general Inorganic Chemistry course.

Physics *

Prerequisite Algebra I, Geometry

Recommended for Grades: 12

Full Year

1 Credit

***May be used as a senior year math credit**

Students taking this course will learn about force, motion and energy during the first semester, and waves, sound, light, electricity and atomic energy during the second semester. Projects will be required throughout the year including catapults. Short 1-day or 2-day projects pertaining to the topic being studied at the time will be used throughout the year. This course will help prepare students to take entry-level physics at any college.

Advanced Biology

Prerequisite Biology "B" or better, Chemistry "B" or better

Recommended for Grades: 11 & 12

Full Year

1 Credit

This class is provided to allow college-bound students to expand their conceptual framework, factual knowledge, and analytical skills that initially were developed in their introductory biology class. The first semester of work is devoted to the study of heredity, populational biology (hardy Weinberg), basic biological chemistry of carbohydrates, lipids, proteins, and nucleic acids and the biochemistry of the light and dark reactions and the chemiosmotic synthesis of ATP. During the second semester the focus will shift to the structure, function and biochemistry of the various vertebrate organ systems, the biochemistry of glycolysis and cellular respiration, and introductory biometrics. Occasionally some projects and laboratory work will necessitate that students spend additional time in the laboratory. Every student planning on attending college should be enrolled in Advanced Biology in their junior or senior year. Almost every career path requires credits earned in Intro level Biology in college.

Advanced Placement Biology

Pre requisite Chemistry "B" or better

Recommended for Grades: 11 & 12

Full Year

1 Credit

This class is provided to prepare college-bound students to take the Advanced Placement examination in Biology. Students enrolled in AP Biology must also be concurrently enrolled in Advanced Biology. Taken together the classes cover the entire AP Biology course description. A complete AP Biology course description is published by the College Board. Copies of this complete description can be obtained by the principal or AP Biology instructor. Topics covered in AP Biology from molecules and cells include enzymology, cells, membranes, sub cellular organization, and cell cycle and regulation. Topics covered from heredity and evolution include gametogenesis, DNA and RNA structure and function, gene regulation, mutation, viral structure and replication, nucleic acid technology, early evolution of life, evidence for evolution and mechanisms of evolution. Topics covered from organisms and populations include evolutionary patterns, survey of the diversity of life, phylogenetic classification,

evolutionary relationships, reproduction, growth and development of plants and animals, structural, physiological, behavioral adaptations and responses to the environment, population dynamics, communities and ecosystems and global issues.

Veterinary Science

Recommended for Grades: 10-12

Full Year

1 Credit

This is a one year course that provides an opportunity for students to explore and gain experience in the field of veterinary medicine. The course covers anatomy & physiology, animal diseases, parasites, medical terminology, posology (medical math), nutrition, radiology, nursing care of animals, laboratory procedures, animal handling skills and explore animal related career options.