

SCIENCE DEPARTMENT

PHILOSOPHY

The Science Department aims to provide the students with a grasp of the basic conceptual structure of each science, which is taught. In addition, emphasis is placed on the encouragement of the development of the higher level thinking skills, such as analysis and synthesis.

We believe that our science curriculum exposes the students to options in science related careers and develops a positive attitude toward science. The student should gain an awareness of the relationships of the sciences to each other and to other areas of interest -- a feel for the place of science in life.

Finally, through the study of science and current scientific advances the student should gain an awareness that knowledge and ability imply responsibility, and that decisions are not made in isolation, but rather in context. They should come to feel that a study of the sciences does not decrease their involvement with other people, but rather makes that involvement more vital.

OBJECTIVES

Following the above philosophy, the goals and objectives of the department are:

1. to promote the development of a positive attitude toward science and its methods.
2. to provide students with critical thinking skills through the use of laboratory experiences.
3. to develop in the student the ability to work effectively in a group situation by means of lab work and small group discussion.
4. to provide students with an ability to work with basic concepts in the sciences.
5. to lessen science anxiety in the more advanced sciences by providing a positive learning atmosphere.
6. to develop in the students initiative and responsibility for accomplishing goals on their own through project work.
7. to aid the students in clarifying the relationship between themselves and their environment.
8. develop within each student a deep respect for all of God's living creation, and especially respect for all human life.
9. to use appropriate technology as a tool for scientific learning

COURSE OFFERINGS AND DESCRIPTIONS

All 9th graders must take a science -- Conceptual Science or Biology

Anatomy and Physiology

(full year - 10 credits)

Grades 11 -12

The course is designed primarily for those who may be planning a career in the health science fields. The course will concentrate primarily on the study of the human anatomy and physiology. Limited coverage of human genetics may also be included. Laboratory will be included. Weighted

Prerequisite: C+ (83-85%) in Chemistry and recommendation by the department.

Biology

(full year - 10 credits)

Grade 9 - 10

This general biology course focuses on the principles of biological processes, functions, theories and research. The course work includes lecture, group activity, labs and special research projects. Topics covered include cell structure and function, genetics, phylogenic classification and taxonomy, plant growth and development, animal growth and development, ecological systems, and comparison of other living systems to the human systems. Emphasis throughout the course is placed upon making responsible decisions regarding moral and ethical issues in the biological sciences.

Prerequisite: 90% or higher in 8th grade science and completion of Algebra I or departmental approval. Departmental approval required for 9th grade.

Chemistry

(full year - 10 credits)

Grades 10 - 11 - 12

Chemistry is an introductory course covering atomic structure, chemical reactions, stoichiometry, thermochemistry, bonding, molecular structure and states of matter. Emphasis placed upon mathematical applications and conceptual understanding. The class involves lectures, lab work and individual work.

Prerequisite: Enrollment or credit in Algebra II, second semester grade in biology of 85% or greater or departmental approval.

Chemistry II

(full year - 10 credits)

Grades 11 - 12

Chemistry II stresses in-depth content coverage. This allows students to focus on the more difficult material often found in an introductory college chemistry course. As with chemistry I, the class consists of lecture/discussion, individual/group work, and lab exercises. Topics include chemical kinetics and thermodynamics, equilibria, oxidation-reduction reactions and acid-base reactions. Possible additional topics include, electrochemistry, nuclear chemistry, and organic chemistry. Weighted.

Prerequisites: B (85%) or above in Chemistry I and completion of Algebra II or department approval.

Conceptual Science

(full year - 10 credits)

Grade 9-10

This class is specialized to teach and reinforce many fundamental scientific concepts. The primary focus and intention of this class will be to address themes and concepts of the physical and life sciences, which relate to matter and energy, and permeate all branches of science, through the use of inquiry based learning techniques.

Prerequisite: recommendation of the science department.

Topics in Science

(full year - 10 credits)

Grades 11- 12

This is a broad range course covering selected topics in each of the primary areas of science, including life, earth, physical and chemical science. The course content will be based on a problem solving approach to incorporate science principles and concepts into deriving solutions to selected topics in the various fields of science.

This course is designed to give students an appreciation of the natural sciences though the student may not be considering a career in a scientific field.

Prerequisite: recommendation of the science department.

Physics

(full year - 10 credits)

Grade 12

Physics is a one-year course which covers classical mechanics and thermodynamics with an introduction to astronomy. The class involves lectures, lab work and individual work. Weighted.

Prerequisite: Enrollment or credit in Pre-Calculus or departmental approval.