

## SCIENCE DEPARTMENT

Class Number: 2  
Class Name: **Ecology** (Elective)  
Length of Class: Spring Semester  
Prerequisite: Biology  
Grade Level: 11 - 12

Ecology is a course that looks at the relationships between living things and their environment. In this course, students will study basics of populations, communities, and ecosystems. Discussions of environmental issues and possible causes, effects, and solutions will be held. During the 3<sup>rd</sup> quarter, students are required to read a book of their choosing that has an ecological theme. They will then write a report/critique of the book and give a presentation to the class. During the 4<sup>th</sup> quarter, students choose a current topic of environmental interest and with a small group conduct research on this topic and give a presentation to the class and other invited guests. Students are encouraged to research a topic of local interest. There is also one work-day volunteering for the Story County Conservation Department.

Class Number: 3  
Class Name: **Physical Science** (Required)  
Length of Class: One Year  
Prerequisite: None  
Grade Level: 9

The goal of this course is to provide a foundation for all students in the fundamental concepts of chemistry and physics, whether or not they are considering enrollment in upper level chemistry and physics courses in the future. Main topics explored include energy and motion, the composition of matter, the interactions of matter, waves, light, sound, and electricity. Maximum use of various media, demonstrations, and lab activities are made to clarify important concepts, and give students concrete experiences from which to gain a better understanding. Recognizing how scientific knowledge has been utilized in the development of technology is another important goal of the class. Evaluation is based on results of chapter tests, daily work, lab work, projects, and quizzes.

Class Number: 4

Class Name: **Biology** (Required)  
Length of Class: Year  
Prerequisite: None  
Grade Level: 10

Biology is the study of life. Topics covered in the first semester are: the chemical basis of life, the basics of cells and cellular biology, and genetics and heredity. The second semester topics include: an introduction to evolution, an introduction to ecology, and a brief overview of microorganisms, plants, invertebrates, and vertebrates. Experiments and dissections will be carried out. Each quarter students must do a quarter project that relates to one of the biological topics being covered that quarter. Suggestions for project ideas are given by the teacher, but students are encouraged to develop their own projects.

Class Number: 5  
Class Name: **Physics** (Elective)  
Length of Class: One Year  
Prerequisite: None  
Grade Level: 11 - 12

The physics course is open to all students who have a good background in math and science. It has an informal lecture/discussion format, where student participation is greatly encouraged. Demonstrations, and lab work by the students, are used frequently to verify the principles and concepts described by the text. Applying these ideas to the solving of problems is also an important part of the class. Topics explored include forces, motion, gravity, work, waves, sound, light, electricity, and nuclear energy. Participation in the AEA Physics Olympics is also an annual part of the curriculum. Criteria for evaluation includes scores from problems assigned, chapter tests and quizzes, lab participation and reports, and special projects.

Class Number: 6  
Class Name: **Anatomy** (Elective)  
Length of Class: Year  
Prerequisite: Biology  
Grade Level: 11 - 12

This is a course for college oriented students who may be considering careers in any health science, veterinary science, or related field. It is also a course for any student interested in learning more about the human body and familiarizing themselves with anatomical terms they are sure to hear at the doctor or dentist's office, in the news, or in any future health concerns they may have concerning themselves or their families. Students should only take this course if they had a good understanding of biology. Lab work will include some dissections, group projects, and drawing diagrams.

Class Number: 10  
Class Name: **Chemistry** (Elective)  
Length of Class: Year  
Prerequisite: Algebra II  
Grade Level: 11 - 12

All students planning to go to college should seriously consider taking this course since three (3) years of high school science are required by many colleges and universities. The course is basically designed to meet the needs of the students who will attend college and will be taking at least one semester of chemistry at that level. A good math background is necessary to understand the many formulas of chemistry. The following topics are studied: Chemical theories, reactions and equations, atom structure, periodic table, phases of matter, types of solutions, acids and bases, plus all of the math formulas and problems associated with these areas. Approximately one period every two weeks will be spent doing lab experiments or demos. This is taught and graded as a college prep course.

Class Number 9  
Class Name: **AP Biology**  
Length of Class: Year  
Prerequisite: C+ or better in Biology  
Grade Level: 11 or 12

AP Biology is designed to be the equivalent of a college introductory biology course usually taken by BIOLOGY MAJORS during their first year. If students show they are qualified on the AP Examination, some students, as college freshmen, are allowed to take upper-level biology courses or courses that require biology as a prerequisite. If students are not science majors, they may have fulfilled a basic requirement for a lab course and be able to take other courses related to their major.

Three general areas have been identified as the topics for AP Biology:

- I. Molecules and Cells
- II. Heredity and Evolution
- III. Organisms and Populations

Throughout the course, there will be numerous labs as time and supplies permit. Only students who maintained at least a C+ average in Biology are allowed to take AP Biology.