

FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT

Course Outline Advanced Placement Biology

Date: October 2001

Subject Area: Life Science

Proposed Grade Level(s): 11 & 12

Course Length: 1 Year

Grading: A-F

Number of Credits: 5/Semester

Prerequisites: Biology, Chemistry, Algebra

COURSE DESCRIPTION:

This course is designed to be the equivalent of a college introductory biology course usually taken by biology majors during the first year. AP students, as college freshmen, are permitted to undertake upper-level courses in biology or to register for courses for which biology is a prerequisite. Other students may have fulfilled a basic requirement for a laboratory science course and will be able to undertake other courses to pursue their majors.

AP Biology should include the topics regularly covered in a college biology course for majors or in the syllabus from a high-quality college program in introductory biology. The textbooks used for AP Biology should be those used by college biology majors and the kinds of labs done by AP students must be the equivalent of those done by college students.

The AP Biology course is designed to be taken by students after the successful completion of a high school biology and chemistry course. It aims to provide students with the conceptual framework, factual knowledge, and analytical skills necessary to deal critically with the rapidly changing science of biology.

GENERAL GOALS/PURPOSES:

The two main goals of AP Biology are to help students develop a conceptual framework for modern biology and to help students gain an appreciation of science as a process. The ongoing information explosion in biology makes these goals even more challenging. Primary emphasis in an Advanced Placement Biology course should be on developing an understanding of concepts rather than memorizing terms and technical details. Essential to this conceptual understanding are the following: a grasp of science as a process rather than as an accumulation of facts; personal experience in scientific inquiry; recognition of unifying themes that integrate the major topics of biology; and application of biological knowledge and critical thinking to environmental and social concerns.

The AP Biology Development Committee conducts college curriculum surveys of introductory biology courses for biology majors and develops the AP Biology Examination so that it is representative of the topics covered by the survey group. Accordingly, goals have been set for percentage coverage of three general areas:

- I. Molecules and Cells, 25%
- II. Heredity and Evolution, 25%
- III. Organisms and Populations, 50%

These three areas have been subdivided into major categories with percentage goals for each major category specified.

STUDENT READING COMPONENT:

Students will read at the 12th and 13th grade levels from textbooks, laboratory assignments, and research from the Internet and library.

STUDENT WRITING COMPONENT:

Lab assignments will be done on a regular basis, and detailed written reports will be turned in.

STUDENT ORAL COMPONENT:

- Students will work collaboratively during laboratory experiments.
- Students will orally present their research projects to the class.

DETAILED UNITS OF INSTRUCTION:

I. Molecules and Cells (25%)

A. Chemistry of Life (7%)

1. Water
2. Organic molecules in organisms
3. Free energy changes
4. Enzymes

B. Cells (10%)

1. Prokaryotic and eukaryotic cells
2. Membranes
3. Subcellular organization
4. Cell cycle and its regulation

C. Cellular Energies (8%)

1. Coupled reactions
2. Fermentation and cellular respiration
3. Photosynthesis

II. Heredity and Evolution (25%)

A. Heredity (8%)

1. Meiosis and gametogenesis
2. Eukaryotic chromosomes
3. Inheritance patterns

B. Molecular Genetics (9%)

1. RNA and DNA structure and function
2. Gene regulation
3. Mutation
4. Viral structure and replication
5. Nucleic acid technology and applications

- C. Evolutionary Biology (8%)
 - 1. Early evolution of life
 - 2. Evidence for evolution
 - 3. Mechanisms of evolution

III. Organisms and Populations (50%)

- A. Diversity of Organisms (8%)
 - 1. Evolutionary patterns
 - 2. Survey of the diversity of life
 - 3. Phylogenetic classification
 - 4. Evolutionary relationships

- B. Structure and Function of Plants and Animals (32%)
 - 1. Reproduction, growth, and development
 - 2. Structural, physiological, and behavioral adaptations
 - 3. Response to the environment

- C. Ecology (10%)
 - 1. Population dynamics
 - 2. Communities and ecosystems
 - 3. Global issues

EVALUATION PROCEDURE: Grades will be based on the following:

- Tests and quizzes
- Laboratory work

LAB FEE IF REQUIRED: None

SUBJECT AREA CONTENT STANDARDS TO BE ADDRESSED:

It is the student's responsibility to keep up with their work, have assignments turned in on time and be prepared for class each day. In this report, success depends on being a **self-directed learner**.

Written and oral communications are both important in this class. Students will be expected to **communicate effectively** as they explain the concepts of physics as they relate to the class activities.

Assessment of class work requires students to be **quality producers** in order to be successful in this class.

The lab activities that students are involved in require analysis and application of learned concepts. In order to synthesize and apply course concepts, students need to be **constructive thinkers**.

Lab activities are done in cooperative groups. Students need to be **collaborative learners** in order to adequately complete these tasks.

Prompt class attendance and active, creative involvement in class activities emphasize the need for students to be **responsible citizens**.