

AP Biology at University High School

Introduction

The AP Biology course at UHS is designed to be the equivalent of a college introductory biology course usually taken by biology majors during their first year. After showing themselves to be qualified on the AP Examination, some 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. Other students will not receive credit for the course at the university they attend. AP Biology at UHS includes those topics regularly covered in a college biology course for majors. The college course in biology differs significantly from the usual first high school course in biology with respect to the kind of textbook used, the range and depth of topics covered, the kind of laboratory work done by students, and the time and effort required of students. The textbook used for AP Biology at UHS is used by college biology majors at many universities including UCI, UC Berkeley, UCLA and USC, to name a just a few. AP Biology at UHS aims to provide students with the conceptual framework, factual knowledge, and analytical skills necessary to deal critically with the rapidly changing science of biology.

The Course at UHS

Because of the scope of the curriculum and because of our time limitations, some areas of biology are skimmed over and others are omitted. Students must assume the responsibility for filling in these gaps with their own reading programs. They are expected to spend more time doing homework for this course than they have in many previous science courses. The most important difference between the AP course and the first biology course is that students must assume responsibility for their learning. While office hours is available and students are encouraged to seek help when necessary, students in AP courses are expected to be independent learners, studying the material in greater detail than in previous courses such as Coordinated Science 1 and 2. **Due to the breadth of information covered in this course, students must be prepared for significant independent study time during the year, including holidays.**

12 Recommended Biology Laboratories

The kinds of labs done by AP students must be the equivalent of those done by college students. The twelve labs recommended by the College Board are intended to challenge students' abilities to understand problems, develop and implement appropriate experimental designs, manipulate data, draw conclusions, think analytically, and develop hypotheses. In these laboratories, students are challenged to perform experiments drawn from some of the more important areas within modern biology, including biological chemistry, cell structure and function, energy transformation, molecular genetics, heredity, plant structure and physiology, animal structure and physiology, behavior, and ecology. To allow students to show their mastery of laboratory science skills and knowledge, some questions on the objective portion and/or one or more of the four mandatory essay questions on the AP Biology Examination each year may reflect the topics and objectives associated with the 12 AP Biology laboratories.

In the Honors Coordinated Science 2 program many of you should have had the opportunity to conduct laboratories that are similar to those that we do in AP Biology at UHS. Portions of laboratories 1, 3, 4, 9, 10 and 12 may have been conducted in your CS2 class and will be discussed throughout the year. It is expected that you understand the outcomes, the methods used in these labs and conclusions draw from them. We will conduct some of these activities again and/or review the concepts presented. You are expected to understand the laboratory activities, regardless of your past experiences.

Laboratory Topic

1. Diffusion and Osmosis [Unit 3]
2. Enzyme Catalysis [Unit 2]
3. Mitosis and Meiosis [Unit 3]
4. Plant Pigments and Photosynthesis [Unit 4]
5. Cell Respiration [Unit 4]
6. Molecular Biology [Unit 6]
7. Genetics of Organisms [Unit 5]
8. Population Genetics and Evolution [Unit 8]
9. Transpiration [Unit 4]
10. Physiology of the Circulatory System [Unit 13]
11. Animal Behavior [Unit 1]
12. Dissolved Oxygen and Aquatic Primary Productivity [Unit 15]

The Examination

The AP Biology Examination is three hours in length and is designed to measure a student's knowledge and understanding of modern biology. The examination consists of a 90-minute, 120-item multiple-choice section, which examines the student's understanding of representative content and concepts drawn from across the entire course, and a 90-minute free-response section, consisting of four **mandatory** questions that encompass broader topics. The number of multiple-choice items taken from each major subset of biology reflects the percentage of the course as designated in the course description. In the free-response portion of the examination, usually one essay question is taken from Area I of the outline (Molecules and Cells) and another question focuses on Area II (Heredity and Evolution). Two questions generally focus on Area III of the outline (Organisms and Populations). Any of these four questions may require the student to analyze and interpret data or information drawn from laboratory experience, as well as from lecture material, and may require students to integrate material from different areas of the course. The multiple-choice section counts for 60 percent of the student's examination grade, and the free-response section counts for 40 percent. Within the free-response section, each of the four questions is weighted equally. The answers to the free-response questions must be in essay form; outlines alone or unlabeled and unexplained diagrams alone are not acceptable. The candidates should read each question carefully, organize their material neatly, and compose answers that are as comprehensive and precise as time permits. Traditionally, students at UNI do exceptionally well on the AP exam with a pass rate above 95%. Of the passing students, a vast majority receive a 5.

AP Biology