AP Biology
2007/2008

Class Overview - Advanced Placement, or AP, Biology is designed to prepare students for the AP Biology examination given each spring by the College Board. The course is designed to be equivalent to a two-semester college-level course. Successful completion of the course and score on the exam may allow students to receive credit for an introductory-level biology course at the university level. Because of the depth of the curriculum in AP Biology, students are expected to take responsibility for their own learning under the guidance of the instructor. Students enrolled in AP Biology must be prepared to do the following:

- Attend class regularly. (See make-up policy below.)
- Study and read outside of class. This will include weekends and holidays.
- Complete all assignments.
- Bring all required materials to class. (See below.)
- Register, pay for, and take the AP exam. (Details will follow.)
- Ask questions and be communicative about areas of need.

This course is a survey of current biology theories and ideas. The eight major themes from the AP Biology Course Description (science as process; evolution; energy transfer; continuity and change; structure and function; regulation; interdependence; and science, technology and nature) are stressed throughout the course. In particular, evidence of evolution is employed as a unifying theme across topics.

Students will explore biology through textbook learning, laboratory experiences, current event discussions, and more. For example, students will write a letter to an elected official addressing an environmental concern and possible solutions the students have researched. This activity introduces the students to proper research techniques using traditional library sources and electronic sources. Students will learn to discriminate between meaningful and not-so-meaningful information. The laboratory component is stressed for students to discover that science is a process. Lab activities emphasize development and testing of the hypothesis; collection, analysis, and presentation of data; and a clear discussion of results.
Throughout the year, students will be preparing for the AP Biology Exam by taking practice exams and answering Free-Response Questions (F-RQs). By practicing, students will gain experience answering the types of questions found on the AP exam, develop their critical thinking skills, and improve their writing skills.

Prerequisites - Students entering the AP biology course must have completed Biology or Honors Biology with a grade of A or B and with the recommendation of the teacher. It is preferable that students also have completed or are enrolled in chemistry and/or physics. While Human Anatomy is not a prerequisite for AP biology, it is a very good supplemental course and may be taken before or at the same time as AP Biology. In addition to science preparation, students in AP Biology should have a strong math background, having been successful in both Algebra I and Geometry.

Materials – Students will need the following items: (Those marked with * should be in class every day.)

1. Lecture/Reading Notebook (Spiral notebook or memo book)*
2. Graph paper
3. Scientific calculator
4. No. 2 pencils and black ball-point pens*
5. Current textbook (Campbell, N. Reece, J. *Biology,7th Edition*. Pearson, Benjamin-Cummings.)*
6. Access to the Internet, either at home or school, and a current email address
7. Note Cards – Vocabulary terms (40 per unit, collected at the end of each unit.)

Assignments/Make-Ups – All assignments are due on the given due date. No credit will be given for late assignments without prior arrangements. If a student is absent, any work is due on the day the student returns to school. For these reasons, each student should be able to contact (via email or phone) the teacher or at least one other student in the class for work assigned.

Schedule/Timeline – See the following pages for an overview of the entire year. Although a weekly calendar will be posted in class and you can access my iCal online throughout the year, please keep this as a reference. All reading should be done before we discuss the topics in class. All labs are hands-on unless otherwise noted. Each lab comprises a minimum of three days of class time. The first day is pre-lab (introduction to the lab, review or introduction of techniques, safety precautions, etc.); the second day is lab day (because we have only a 50-minute period, most labs will run into the lunch period); the third day is post-lab (review of calculations, comparison of data, discussion of lab). The total amount spent on lab activities is greater than 25% of the total class time.

Grading – Student grades will be based on the aforementioned assignments, laboratory activities and class-work/homework assignments. Assessments will include multiple-choice (AP-style) quizzes and tests and practice Free-Response Questions throughout the year. All grades are totaled in together and carry the same weight.

Class Rules – Because of the depth of curriculum and level of knowledge in this course, it is expected that all students adhere to a high level of self-discipline. This is especially important during laboratory procedures. Students will be working with chemicals, live materials, and expensive equipment. Each student must be familiar with and adhere to all Laboratory Safety guidelines (separate paper.) If self-discipline is not enough, the teacher will provide necessary penalties, possibly including removal from the course.

Schedule of Topics and Accompanying Labs

First Semester				
Unit	**Topics**	**Assignments/Readings/Labs**	**Exams/Quizzes**	**Length**
1	The Chemistry of Life • Chemistry • Water • Carbon • Macromolecules	Chapters 1-5 • Chemistry of Life Worksheet • It's Elementary Worksheet • Painkiller Article • Sickle Cell Article • Lab 2 – Enzyme Catalysis • Toothpickase Lab	Unit 1 Test	8 weeks
2	The Cell • Cell Structure • Membranes • Photosynthesis • Respiration • Cell Cycle	Chapters 6-12 • Cell Parts Poster Project • Fidgeting Article • Respiration & Photosynthesis Worksheet • Lab 1 – Osmosis & Diffusion • Lab 4 – Photosynthesis • Lab 5 - Respiration	F-RQ 2006 #1 F-RQ 2005B #4 F-RQ 2005 #1 F-RQ 2004 #3 Unit 2 Test	
Practice AP Exam – First 25% - Part I, Molecules & Cells				
Unit	**Topics**	**Assignments/Readings/Labs**	**Exams/Quizzes**	**Length**
3	Genetics • Meiosis • Mendel • Chromosomes • DNA • Protein Synthesis • Viruses • Biotechnology	Chapters 13-21 • Lab 3 – Mitosis & Meiosis • Lab 6 – DNA Transformation • Lab 7 – Genetics of Organisms (virtual)	F-RQ 2004 #1 F-RQ 2005 #2 F-RQ 2005B #3/2006B #2 Unit 3 Test	8 weeks
4	Mechanisms of Evolution • Phylogeny & Systematics • The Early Earth	Chapters 22-25 • Lab 8 – Population Genetics & Evolution	F-RQ 2004 #2 F-RQ 2006 #1 Unit 4 Test	
5	The Evolutionary History of Biological Diversity • Prokaryotes • Eukaryote Diversity • Plants & Land • Animals • Vertebrates	Chapters 26-34	F-RQ 2004B #1 F-RQ 2004B #4/2005B #2 Unit 5 Test	
Practice AP Exam – Second 25% - Part II, Heredity & Evolution				

Second Semester				
Unit	**Topics**	**Assignments/Readings/Labs**	**Exams/Quizzes**	**Length**
6	Plant Form & Function • Structures • Reproduction • Adaptations	Chapters 35-39 • Group Presentations (Chapter Peer-Teaching) • Lab 9 - Transpiration	FR-Q 2005 #3 Unit 6 Test	14 weeks
7	Animal Form & Function • Structures • Animal Systems	Chapters 40-49 • Lab 10 – Physiology of the Circulatory System • Lab 11 – Animal Behavior (virtual)	FR-Q 2006 #4 FR-Q 2005 #4 FR-Q 2006B #1 FR-Q 2004B #3 Unit 7 Test	
8	Ecology • Ecosystems • Populations • Interactions • Environmental Concerns	Chapters 50-55 • Lab 12 – Dissolved Oxygen & Aquatic Primary Activity • Environment Letter • Silent Spring, Chapters 1 & 2	FR-Q 2004 #4 Unit 8 Test	
Practice AP Exam – Final 50% - Part III, Organisms & Populations				
Various Practice Exams & Reviews until AP Exam				