

ADVANCED PLACEMENT CLASSES

ADVANCED PLACEMENT BIOLOGY AB

Annual Course— Grades 10–12 Prerequisites: Biology AB or Chemistry AB is recommended.

Prerequisite: None

36-07-07 AP BIO A

36-07-08 AP BIO B

Course Description

AP Biology is a college-preparatory science courses for students who can profit from its provided enrichment. Other students may profit more from taking AP Biology after having taken other high school science courses. This course may be accepted by colleges for course credit or advanced placement of students who qualify on the Advanced Placement Examination. A college-level course for students eligible for honors classes, AP Biology differs significantly from the usual first-year high school course by the textbook used, the range and depth of topics covered, the kind of laboratory work done, and the time and effort required of students. School administrators should be aware that an AP college-level laboratory is significantly more expensive to operate than a typical high school biology laboratory and requires more time than non-AP science courses. The equivalent of two double periods a week for laboratory work is highly recommended. **AP Biology AB meets the Grades 9-12 District life science requirement. It also meets one year of the University of California ‘d’ entrance requirement for laboratory science**

Instructional Units and Pacing Plans

INSTRUCTIONAL UNITS	*SUGGESTED WEEKS	
Chemistry of Life	2	2
Cells	3	4
Cellular Energetics	3	3
Heredity	3	3
Molecular Genetics	3	4
Evolutionary Biology	3	3
Diversity of Organisms	2	3
Structure and Function of Plants and Animals	10	12
Ecology	3	4
Total	*32	*38
	year-round	traditional

* Suggested weeks are to be used as an estimate only. Advanced Placement teachers should refer to the most recent Advanced Placement Course Description for Biology (*Acorn Book*), for a detailed description of the course objectives, performance skills, and topics (instructional units), which will be covered on the Advanced Placement Examination. The *Acorn Book* is published by the College Board (Advanced Placement Program, P.O. Box 6670, Princeton, NJ 08541-6670). The course description is also available on the College Board Website, www.collegeboard.com. The *AP Biology* Test is normally given during the second or third week in May.

Representative Performance Outcomes and Skills

In accordance with their individual capacity, students will grow in the ability to:

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- Demonstrate process skills of scientific thinking: observing, communicating, comparing, ordering, categorizing, relating, inferring, and applying.
- Demonstrate skills in the areas of speaking, listening, writing, reading, graphing, mapping skills, and mathematics.
- Handle safely the equipment and materials common to chemistry laboratory.
- Evaluate the contributions of science and technology and their relevance to improving our daily lives in preparation for the future.
- Establish the relevance of science and its applications to careers and real-life situations.
- Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests collect data, analyze relationships, and display data.*
- Identify and communicate sources of unavoidable experimental error.*
- Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.*
- Formulate explanations by using logic and evidence.*
- Solve scientific problems by using quadratic equations and simple trigonometric, exponential, and logarithmic functions.*
- Distinguish between hypothesis and theory as scientific terms.*
- Recognize the usefulness and limitations of models and theories as scientific representations of reality.*
- Read and interpret topographic and geologic maps.*
- Analyze the locations, sequences, or time intervals that are characteristic of natural phenomena (e.g., relative ages of rocks, locations of planets over time, and succession of species in an ecosystem).*
- Recognize the issues of statistical variability and the need for controlled tests.*
- Recognize the cumulative nature of scientific evidence.*
- Analyze situations and solve problems that require combining and applying concepts from more than one area of science.*
- Investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. Examples of issues include irradiation of food, cloning of animals by somatic cell nuclear transfer, choice of energy sources, and land and water use decisions in California.*
- Know that when an observation does not agree with an accepted scientific theory, the observation is sometimes mistaken or fraudulent (e.g., the Piltdown Man fossil or unidentified flying objects) and that the theory is sometimes wrong (e.g., the Ptolemaic model of the movement of the Sun, Moon, and planets).*
- Investigate a societal issue by researching literature, analyzing data and communicating findings and discuss possible future outcomes.
- Demonstrate interconnections between the many disciplines of science.
- Demonstrate the interdisciplinary connections between science and other curricular fields.

Assessments

Instruction in our district is assessment-driven. The Framework states "that effective science programs include continual assessment of student's knowledge and understanding, with appropriate adjustments being made during the academic year (p.11)."¹ Assessments can be on demand or over a long period of time. The District Periodic Assessments and STAR State Testing play a significant role in Student Assessments.

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The chart below, adapted from *A Guide for Teaching and Learning*, NRC (2000), gives some examples of on demand and over time assessment.

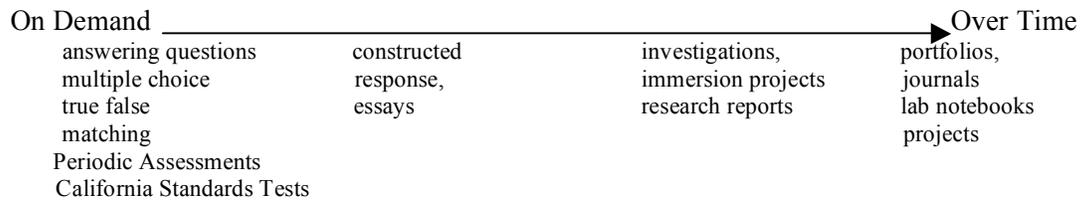


Chart 1 - Assessment Examples

Texts/Materials

- Advanced Placement Course Description for Biology (*Acorn Book*)
- *Science Framework for California Public Schools*
- District Authorized AP Textbooks and ancillary materials:
 - Bedford, Freeman and Worth, *Life: The Science of Biology*, 8th Ed. Sadava, et al. 2008
 - Glencoe/McGraw-Hill, *Biology*, 9th Ed.. Mader 2007
 - Glencoe/McGraw-Hill, *Biology*, 8th Ed. Raven, et al. 2008
 - Pearson/Benjamin Cummings, *Biology*, 7th Ed. Cambell, Reece 2005
 - Thomson Learning/ Brooks-Cole, *Biology*, 7th Ed. Solomon, et al. 2005
- *Science Safety Handbook for California Public Schools*
- Appropriate science laboratory materials