DOES NOT MEET GRADUATION REQUIREMENT ELECTIVES—HIGH SCHOOL

Advanced Biology AB	**Annual Course—Grades 11-12** **Prerequisites: Biology AB, Algebra 1AB or equivalent, Chemistry AB is recommended**
Course Code Number and Abbreviation	**36-07-05 Adv Bio A** **36-07-06 Adv Bio B**
Course Description	The major purpose of this course is to build students' critical thinking skills through laboratory investigations using the scientific method. Students study the physical basis of life, cellular biology, embryological development and differentiation, species diversity and adaptation. **Advanced Biology AB may be used as an elective for District graduation requirements. It meets one year of the University of California *'d'* admission requirement for laboratory science.**
Instructional Units and Pacing Plans	**Instructional Units** — ***Suggested Weeks** Biological Themes and the Scientific Method — 3 — 3 Ecology — 4 — 5 Biomes and Ecosystems Ecosystems: Relationships Environmental Problems Cells — 5 — 6 Genetics — 5 — 6 Evolution — 4 — 5 Living Organisms — 8 — 9 Microorganisms Plants Animals Structure and Function in Living Systems — 3 — 4 **Total** — ***32 year-round** — ***38 traditional** *Suggested weeks are to be used as an estimate only. Pacing will depend on how State Content Standards and the Literacy and Mathematics Initiatives are embedded.

California Language Arts Content Standard	The following standard from *English-Language Arts Content Standards for California Public Schools* will be measured on State assessments: • Use clear research questions and suitable research methods (e.g., library, electronic media, personal interview) to elicit and present evidence from primary and secondary sources.
Representative Performance Objectives	*In accordance with their individual capacity, students will grow in the ability to:* • Demonstrate process skills of scientific thinking: observing, communicating, comparing, ordering, categorizing, relating, inferring, and applying. • Demonstrate skills in the area of speaking, listening, writing, reading, graphing, mapping and mathematics. • 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.* • Analyze the locations, sequences, or time intervals that are characteristic of natural phenomena (e.g., relative ages of rocks, locations of planets over time, chemical reaction rates, 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. **Note:** *Asterisked items are Science Investigation and Experimentation Standards for the State of California.*
Representative Content Objectives	*In accordance with their individual capacity, students will grow in the ability to:* • Describe the importance of controls to experimental design. • Explain sources of experimental error in presenting laboratory or field data. • Describe, plan and conduct long-term laboratory investigations on specific topics. • Explain differences in experimental accuracy and precision, and appropriately correct for experimental error.

	• Analyze current issues in bioethics. • Compare and contrast the values of different kinds of biological research. • Explain how comparative embryology, DNA comparisons, independent molecular clocks, and evidence from the fossil record show probable evolutionary relationships. • Distinguish between individual accommodations to environments and adaptations of populations through genetic change.