



**ANTELOPE VALLEY COLLEGE**

**Academic Affairs Office  
Course Outline of Record**

**COURSE SUBJECT & NUMBER:** BIOL 101 BIOL 101L  
**COURSE NAME:** General Biology  
**COURSE UNITS:** 4.0  
**COURSE HOURS:** 6.0

**COURSE REQUISITES:** *(Follow format of similar courses found in the college catalog.)*

Advisory: Eligibility for College Level Reading and ENGL 101 or satisfactory completion of ENGL 101.

**COURSE DESCRIPTION:** *(Write a short paragraph providing an overview of topics covered. Be sure to identify target audience—transfer, major, GE, degree/certificate, etc. If repeatable, state the number of times at end of description).*

A general education non-major biology course designed to acquaint the students with the nature of science, the unity of life processes, the diversity of living things, the interdependence of organisms in the biosphere, the mechanisms that have shaped life on Earth, and with humans as biological entities. The laboratory focuses on the kinds of living organisms.

NOTE: Biology majors should take BIOL 110 and BIOL 120 instead of this course.

**COURSE OBJECTIVES:** *(Should be stated as performance-based, measurable expected student outcomes. Use Bloom's taxonomy to formulate clear and concise objectives. These objectives are common to all students; they must be clearly related to course content, assignments, and methods of evaluation.)*

**Upon completion of course, the successful student will be able to:**

1. Demonstrate an understanding of the nature, applications, and limitations of scientific inquiry.
2. Describe features common to all living things.
3. Recognize and account for differences in organisms based on their structure and function.
4. Recount the taxonomic hierarchy into which all organisms are placed, and describe the general bases upon which the hierarchy is organized; apply these ideas to a variety of taxonomic groups.
5. Describe ecological roles of organisms and provide examples of organisms that exhibit these roles.
6. Understand evolution as a major theme of biology and recount the evidence for biological evolution; describe the central mechanisms of evolution including mutation, altered embryological development, and natural selection.
7. Demonstrate an understanding of DNA as genetic material and the principles of heredity; apply ideas to problems in biotechnology, medicine, and agriculture.
8. Demonstrate knowledge of essential molecular biological mechanisms including photosynthesis, cellular respiration, protein synthesis, and the control of gene expression.
9. Apply biological concepts to the description and solution of problems in the real world.
10. Become familiar with the names and uses of common laboratory equipments, and procedures.
11. Practice the scientific method by conducting laboratory experiments, carrying them to completion, interpreting the results, and writing appropriate reports.
12. Demonstrate an understanding of several major organ systems of the human body; compare human systems with analogous or homologous systems of other organisms.

**COURSE CONTENT:** *(Enter course content in terms of specific topics or a specific body of knowledge that each instructor must cover. Put topics in outline form with major and minor headings. Title 5 requires that each instructor covers all material listed here.)*

**LECTURE TOPICS**

1. The science of biology  
Introduction to biology  
Characteristics of life  
Levels of classification  
The scientific method  
Evolution
2. The chemistry of life  
The chemical basis of life  
Basic units of life (organic compounds)
3. Cell structure and function
4. Bioenergetics  
Energy and life  
Chemical reactions of life  
Enzyme structure and function  
Cellular respiration: how cells release energy  
Photosynthesis: how cells acquire energy
5. The cellular basis of reproduction  
Binary fission  
The cell cycle and mitosis  
Meiosis
6. The origin and evolution of life
7. The diversity of life  
Prokaryotes (bacteria)  
Viruses  
Protista  
Fungi  
Plants  
Animals: invertebrates and vertebrates
8. Foundations of genetics  
Mendelian genetics  
Chromosomes  
Human genetics
9. Molecular biology  
DNA Structure  
How genes work (from DNA to proteins)
10. Biotechnology
11. Ecology

**LABORATORY TOPICS**

1. Observation and Gathering Data
2. The Microscope
3. Mitotic Cell Division.
4. Prokaryotes: Bacteria and Cyanobacteria
5. Protists
6. Fungi
7. Plants
8. Animals
9. Enzymes, Photosynthesis, Cellular Respiration
10. Internal Transport, Gas Exchange
11. Excretory and Nervous Systems
12. Skeletal, Muscle and Reproductive Systems
13. DNA and Human Genetics
14. Frog Dissection

**TYPICAL READING, WRITING, AND COMPUTATIONAL ASSIGNMENTS**

***This material is necessary for all credit courses. Assignments should be clearly related to course objectives, content, and methods of evaluation. (See sample of a "Model Outline" in the AP&P Standards & Practices handbook.) Include a range of assignments (minimum of three) from which faculty may choose when designing their syllabus.***

**1. Describe nature and frequency of typical reading assignments if applicable; note if any are required:**

Students will read from the textbook, and the lab manual (laboratory exercises), approximately 30 pages each week.

**2. Describe nature and frequency of typical writing assignments if applicable; note if any are required:**

Written homework assignments, consisting of study questions from selected chapters of the text, or other items as assigned by the instructor, may also be used to fulfill the essay requirement. Students also are required to complete preliminary reports designed to prepare them for the work in lab and quizzes, and lab reports during the lab session.

**3. Describe nature and frequency of typical computational assignments if applicable; note if any are required:**

**4. If course is degree applicable/transfer, describe those critical thinking skills that are required; be sure that they reflect course objective. (Title 5 requirements can be found in the AP&P Standards and Practices book.)**

1. Students will learn how to formulate hypotheses and test them with controlled scientific experiments.
2. Students will become more motivated to study biological concepts that they can connect to their own lives and interests
3. Students will acquire an appreciation of the power of restricting ones beliefs to things that can be supported by logical arguments and evidence.

**5. Describe other types of assignments that students may be asked to complete:**

Students may be required to use computer software (tutorials, view animations, practice tests) or web based sources to reinforce concepts and skills presented in the lecture and the lab.

**6. For each of the above categories, describe the estimated time per week it would take a student to complete typical out-of-class assignments. Title 5 uses the Carnegie formula for establishing units using a 2:1 ratio as follows: 1 hr. lecture = 2 hrs. homework; 2 hrs. lecture = 4 hrs. homework; etc. For example: reading text—2 hours; writing reports—3 hours**

**Reading: 9**

**Writing: 3**

**Computational:**

**Other:**

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**METHODS OF INSTRUCTION:** *(Methods must be consistent with content and appropriate to objectives; state in terms of what instructor will be doing in order to present course content to students.)*

Methods of instruction may include but are not limited to: lecture; discussion; boardwork; notes projected from transparencies supplemented with videos, charts and computer animations. Laboratory exercises are introduced by the instructor, who provides essential background material in a lecture/demonstration format. Laboratory exercises then are completed by the students, and may involve observation of various specimens (microscope slides, models, charts, dissections, etc.). A report on the exercise is completed by each student and presented to the instructor for critique and evaluation.

**METHODS OF EVALUATION:** *(These must be clearly related to course content, assignments, and objectives, in order to comply with Title 5 requirements. Describe what instructor will be looking for when evaluating assignments and tests in order to determine whether students have met course objectives. Grades must be based on demonstrated proficiency in subject matter and determined, where appropriate, by essays, objective and essay tests, research papers, problem solving exercises, or skills' demonstrations.)*

Methods of evaluation may include but are not limited to:

1. Midterm examinations.
2. Final examination.
3. Essay items may be included in each test.
4. Approximate 1/2 of the lab grade is derived from weekly quizzes covering the principles of the previous week's work, as well as a review of the current week's exercises.
5. Weekly reports, which include numerous essay questions, are also considered in the determination of this portion of the grade.
6. 1/4 of the lab grade is derived from each of two lab practical exams, that is, a midterm and a final.

**Suggested Texts or other Instructional Materials (include title, author, publisher, date, and edition):**

The Living World, George B. Johnson. Mc GrawHill, Fourth Edition 2006.

General Biology 101 L. Laboratory Exercises are published by the biology department and made available to students through the bookstore.

**Effective Date:** \_\_\_\_\_  
(date course can first be offered to be filled in by Office of Academic Affairs)