

Course Description

A. COVER PAGE

Date of Submission (Please include Month, Day and Year)	
1. Course Title Biology Advanced Placement	9. Subject Area <input type="checkbox"/> History/Social Science <input type="checkbox"/> English <input type="checkbox"/> Mathematics <input checked="" type="checkbox"/> Laboratory Science <input type="checkbox"/> Language other than English <input type="checkbox"/> Visual & Performing Arts <input type="checkbox"/> College Prep Elective
2. Transcript Title / Abbreviation AP Biology	
3. Transcript Course Code / Number SC2158 SC2159	
4. School Pioneer Valley High School	
5. District Santa Maria High School	
6. City Santa Maria, CA 93454	10. Grade Level(s) for which this course is designed 9 10 X 11 X 12 X
7. School / District Web Site www.smjuhsd.k12.ca.us	11. Seeking "Honors" Distinction? <input type="checkbox"/> Yes <input type="checkbox"/> No
8. School Course List Contact Name: Jim Armstrong Title/Position: Asst. Supt/Curric/Instruction Phone: 922-4573 Ext.: 4211 E-mail: jarmstrong@smjuhsd.org	12. Unit Value <input type="checkbox"/> 0.5 (half year or semester equivalent) <input checked="" type="checkbox"/> 1.0 (one year equivalent) <input type="checkbox"/> 2.0 (two year equivalent) <input type="checkbox"/> Other: _____
13. Complete outlines are not needed for courses that were previously approved by UC. If course was previously approved, indicate in which category it falls.	
<input type="checkbox"/> A course reinstated after removal within 3 years. Year removed from list? _____ Same course title? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, previous course title? _____	
<input type="checkbox"/> An identical course approved at another school in same district. Which school? Same course title? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, course title at other school? _____	
<input type="checkbox"/> Alternative course title for course with identical content at this school Title of previously-approved identical course: _____	
<input checked="" type="checkbox"/> Approved Advanced Placement (AP) or International Baccalaureate (IB) course	
<input type="checkbox"/> Approved UC College Prep (UCCP) Initiative course	
<input type="checkbox"/> Approved P.A.S.S. course	
<input type="checkbox"/> Approved ROP/C course. Name of ROP/C? _____	
<input type="checkbox"/> Combining two UC-approved semester VPA courses into a single, year-long VPA course Titles of previously-approved semester courses: _____	
<input type="checkbox"/> Other. Explain: _____	

14. Is this course modeled after an UC-approved course from another school outside your district?

Yes No

If so, which school(s)? _____ Silver Creek High School

Course title at other school _____ AP Biology

15. Pre-Requisites

Science, Math, English GPA of 3.0 or better or teacher recommendation. Algebra II (or equivalent) completed or concurrent. It is recommended that this course follow one year of high school biology and/or chemistry.

16. Co-Requisites

17. Brief Course Description

This course is equivalent to a freshman college course in General Biology. The application of laboratory skills, including interpretation of data and the development of hypotheses, is a major component of this course. This elective college-level course is recommended for students intending to pursue a career in the biological sciences. This course prepares the student to take the College Board Advanced Placement Exam for college credit.

B. COURSE CONTENT

Please refer to instructions

18. Course Goals and/or Major Student Outcomes

Students are prepared for college biology and/or other college level science classes.

Students develop better verbal communication skills.

Students can relate the results of their lab experiments to other in a clear, concise manner.

19. Course Objectives

Upon completion of the course, students will be able to:

1. Describe the atomic structure of an atom and explain the basis of atomic reactivity.
2. Explain the role of acids, salts, and bases in biology.
3. Discuss the biologically important properties of water.
4. Name the four major classes of organic compounds and briefly discuss the general structure of each class.
5. Discuss the importance of nucleic acids in life.
6. Describe each of the four structural arrangements in proteins.
7. Discuss the historical development of the cell theory using specific names.
8. Name 10 major cell organelles, discuss the structure of each and state the role of each in the functioning of the cell.
9. Discuss the concept of the fluid-mosaic model of the cell membrane.
10. Describe the four processes by which substances enter and leave the cell.
11. Discuss the structure and function of biological catalysts.
12. Outline the events of photosynthesis.
13. Outline the events of cellular respiration and fermentation.
14. Compare and contrast the vents of photosynthesis and respiration.
15. List the stages of cell division and discuss the significant events of each stage.
16. Compare and contrast mitosis and meiosis.
17. Compare and contrast oogenesis and spermatogenesis.
18. Describe forms of sexual and asexual reproduction.
19. Compare and contrast external and internal fertilization.

20. Discuss the contributions of Gregor Mendel to the science of genetics.
21. Contrast the views of Lamarck and Darwin on evolution.
22. Explain the role of natural selection in evolution.
23. List the sequence of events proposed for the origin of life.
24. Discuss adaptive radiation and its role in the diversity of life.
25. Outline primate evolution;
26. Describe the energy flow through an ecosystem.
27. Explain the importance of a typical food web in an ecosystem
28. List three types of symbiosis and provide an example of each.
29. Explain ecological succession.
30. Name eight major biomes.
31. List five kingdoms and the characteristics that describe each.
32. Name the major phyla within each kingdom and provide an example of each.
33. Discuss the alternation of generations in plant evolution.
34. Discuss the chemical communication in behavior.
35. Contrast monocots and dicots on the basis of structure and growth pattern.
36. Describe the internal structure of monocot and dicot roots, stems, and leaves.
37. Describe the structure of the human skeleton.
38. Describe the structure of the sarcomere and its role in contraction of muscle.
39. Discuss the role of antagonism in body movement.
40. List five basic functions of the digestive system.
41. List the sequence of digestive structures and their role in digestion.
42. Contrast open and closed circulatory systems.
43. Discuss the evolution of and function of the vertebrate heart.
44. Discuss the blood clotting mechanism in humans.
45. Discuss the role of the lymphatic system.
46. Describe the structure and function of the excretory system.
47. Explain how a nerve impulse is transmitted.
48. Describe the structure of the human nervous system.

49. Discuss the mechanisms for vision and hearing.
50. Explain the mechanism for breathing and the structures involved.
51. Describe both male and female reproductive systems and explain how they function.
52. List the endocrine glands of the body; name the hormones produced and state the general functions of each hormone

20. Course Outline

I. Molecules and Cells (25%)

A. Chemistry of Life (7%)

1. Water
2. Organic molecules in organisms
3. Free energy changes
4. Enzymes

B. Cells (10%)

1. Prokaryotic and eukaryotic cells
2. Membranes
3. Subcellular organization
4. Cell cycle and its regulation

C. Cellular Energetics (8%)

1. Coupled reactions
2. Fermentation and cellular respiration
3. Photosynthesis

II. Heredity and Evolution (25%)

A. Heredity (8%)

1. Meiosis and gametogenesis
2. Eukaryotic chromosomes
3. Inheritance patterns

B. Molecular Genetics (9%)

1. RNA and DNA structure and function
2. Gene regulation
3. Mutation
4. Viral structure and replication
5. Nucleic acid technology and applications

C. Evolutionary Biology

1. Early evolution of life
2. Evidence for evolution
3. Mechanisms of evolution

III. Organisms and Populations

A. Diversity of Organisms

1. Evolutionary patterns
2. Survey of the diversity of life
3. Phylogenetic classification
4. Evolutionary relationships

B. Structure and Function of Plants and Animals

1. Reproduction, growth, and development

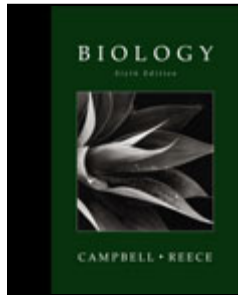
2. Structural, physiological, and behavioral adaptations
3. Response to the environment

C. Ecology

1. Population dynamics
2. Communities and ecosystems
3. Global issues

21. Texts & Supplemental Instructional Materials

Biology, 6/E



Neil A. Campbell, *University of California, Riverside*
Jane B. Reece, *Palo Alto, California*

ISBN: 0-8053-6624-5
Publisher: Benjamin Cummings
Copyright: 2002
Format: Cloth Bound w/CD-ROM;
1175 pp
Published: 12/11/2001

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22. Key Assignments

The College Board has designated 12 labs to meet the lab components of the course.

LABORATORY 1. DIFFUSION AND OSMOSIS

LABORATORY 2. ENZYME CATALYSIS

LABORATORY 3. MITOSIS AND MEIOSIS

LABORATORY 4. PLANT PIGMENTS AND PHOTOSYNTHESIS

LABORATORY 5. CELL RESPIRATION

LABORATORY 6. MOLECULAR BIOLOGY

LABORATORY 7. GENETICS OF ORGANISMS

LABORATORY 8. POPULATION GENETICS AND EVOLUTION

LABORATORY 9. TRANSPIRATION

LABORATORY 10. PHYSIOLOGY OF THE CIRCULATORY SYSTEM

LABORATORY 11. ANIMAL BEHAVIOR

LABORATORY 12. DISSOLVED OXYGEN AND AQUATIC PRIMARY PRODUCTIVITY

23. Instructional Methods and/or Strategies

Lecture
Laboratory activities
Group projects
Class presentations
Internet research
Powerpoint presentations

24. Assessment Methods and/or Tools

Tests
Quizzes
Lab reports
Group projects
Homework
Classwork
Projects

C. HONORS COURSES ONLY

Please refer to instructions

25. Indicate how this honors course is different from the standard course.

D. OPTIONAL BACKGROUND INFORMATION

Please refer to instructions

26. Context for Course (optional)

27. History of Course Development (optional)