

# COLLEGE OF THE DESERT

Course Code BI-004

## Course Outline of Record

1. Course Code: BI-004
2. a. Long Course Title: Elements Of Biology  
b. Short Course Title: ELEMENTS OF BIOLOGY
3. a. Catalog Course Description:  
An introduction to biology for non-science majors including the study of plants, animals, ecology, and evolution. The foundations of biology, including biochemistry, cell biology, genetics, anatomy and physiology, and the impact of humans on the environment, will be covered in this course.  
b. Class Schedule Course Description:  
An introduction to biology for non-science majors covering the foundations of biology with a laboratory component accompanying this course.  
c. Semester Cycle (if applicable): Fall, Spring, and Summer  
d. Name of Approved Program(s):
  - LIBERAL ARTS with emphasis in Math and Science AA Degree and Transfer Preparation
4. Total Units: 4.00      Total Semester Hrs: 108.00  
Lecture Units: 3      Semester Lecture Hrs: 54.00  
Lab Units: 1      Semester Lab Hrs: 54.00  
Class Size Maximum: 28      Allow Audit: No  
Repeatability No Repeats Allowed  
Justification 0
5. Prerequisite or Corequisite Courses or Advisories:  
*Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm1-A)*  
Advisory: ENG 061
6. Textbooks, Required Reading or Software: (List in APA or MLA format.)
  - a. Campbell (2016). Essential Biology with Physiology (5th/e). San Francisco Pearson Benjamin Cummings.  
College Level: Yes  
Flesch-Kincaid reading level: 12.7
  - b. Enger, E. D., Ross, F. C. . Concepts in Biology. McGraw-Hill , 01-15-2012.
7. Entrance Skills: *Before entering the course students must be able:*
  - a. Use critical thinking skills in reading and composition.
    - ENG 061 - Demonstrate the ability to think critically and express ideas using various patterns of development.
  - b. Read and respond in writing beyond literal interpretation of reading assignments.
    - ENG 061 - Demonstrate the ability to read and respond in writing beyond the literal interpretation of the text.
  - c. Organize and express ideas in writing, reports, and answering essay exam questions.
    - ENG 061 - Use theses to organize paragraphs into coherent analyses.
    - ENG 061 - Demonstrate the ability to use research skills including library resources such as books, periodicals, electronic databases and online resources such as the internet.
  - d. Define, analyze, evaluate, explain, compare, and contrast ideas in writing.
    - ENG 061 - Use theses to organize paragraphs into coherent analyses.
    - ENG 061 - Demonstrate the ability to think critically and express ideas using various patterns of development.
    - ENG 061 - Recognize features of style such as purpose, audience and tone integrate these elements into academic and professional writing.
  - e. Use appropriate vocabulary and style.
    - ENG 061 - Recognize features of style such as purpose, audience and tone integrate these elements into academic and professional writing.

f. Apply standard rules of grammar, punctuation, composition mechanics, and use correct spelling.

- ENG 061 - Use theses to organize paragraphs into coherent analyses.
- ENG 061 - Demonstrate the ability to think critically and express ideas using various patterns of development.

g. Combine information gained from reading assignments and lectures to other disciplines.

- ENG 061 - Use theses to organize paragraphs into coherent analyses.
- ENG 061 - Demonstrate the ability to think critically and express ideas using various patterns of development.
- ENG 061 - Demonstrate the ability to use research skills including library resources such as books, periodicals, electronic databases and online resources such as the internet.
- ENG 061 - Demonstrate the ability to read and respond in writing beyond the literal interpretation of the text.

8. Course Content and Scope:

Lecture:

1. Introduction to Biology
  1. The scope of life including evolution and the processes of science
  2. Essential chemistry – basic chemistry – general and inorganic
  3. The molecules of life – organic and biological
  4. Cell structure and function
2. Biochemical Processes of Life and Reproduction
  1. Cellular respiration – aerobic and anaerobic
  2. Photosynthesis and its environmental impact
  3. Cellular reproduction – mitosis and meiosis
  4. Patterns of inheritance – Mendelian genetics
  5. The structure and function of DNA and RNA
3. Evolution and Diversity
  1. The Darwinian approach to population evolution
  2. The Darwinian approach to biological diversity
  3. The origin of life and the evolution of microbes
  4. The colonization of land by plants and fungi
  5. The evolution of animals
4. Ecology
  1. The ecology of organisms, populations, and their evolutionary adaptations
  2. Communities and ecosystems including energy flow and nutrient cycling
  3. Human impact on the environment including crises and conservation
  4. Controlling genes including cancer research and cloning of organisms
    1. DNA technology including DNA in forensic science and gene therapies
  5. Animal form and function relating to internal and external environments
5. Human Anatomy and Physiology
  1. Human nutrition and the digestive system
  2. Human circulation and respiration
  3. Human immunity and immune disorders
  4. Hormones and their role in human reproduction and development
  5. Human nervous system including senses and motor systems
6. Plant Anatomy and Physiology
  1. Plant structure and function and the relationship to life cycles
  2. Plants and nutrients, hormones, and response to stimuli

Lab: *(if the "Lab Hours" is greater than zero this is required)*

1. Introduction to Biology
  1. The Metric System and the Scientific Method
  2. General and Organic Chemistry
2. Reproduction and Development
  1. The Structure and Function of DNA and RNA
  2. Mitosis and Meiosis
  3. Mendelian Genetics
3. Biology of Organisms
  1. Bacteria, Protists and Fungi Survey

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| <ol style="list-style-type: none"><li>2. Plant Structure and Function</li><li>3. Invertebrates</li><li>4. Vertebrates</li><li>5. Concepts of Animal Structure and Function</li></ol> <ol style="list-style-type: none"><li>4. Human Anatomy and Physiology<ol style="list-style-type: none"><li>1. Human Digestive and Circulatory Systems</li><li>2. Human Nervous, Muscular, and Skeletal Systems</li></ol></li></ol> |
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9. Course Student Learning Outcomes:

1.  
Apply the scientific method concept including designing and conducting experiments and testing their hypotheses.
2.  
Develop laboratory techniques (such as light microscopy and recording data in a laboratory manual and an understanding of principles of laboratory safety).
3.  
Demonstrate the ability to read, understand, and critically review scientific papers.
4.  
Recognize the relationship between structure and function at all levels: molecular, cellular, and organismal.
5.  
Recognize the relationship in cellular processes between eukaryotes and prokaryotes.
6.  
Describe the flow of genetic information and the chromosome theory of heredity.
7.  
Evaluate the principles of evolutionary biology and identify the taxonomy and phylogenetic relationships of representative groups of organisms.

10. Course Objectives: *Upon completion of this course, students will be able to:*

- a. Demonstrate an understanding of the concepts and principles of basic biology.
- b. Identify and explain basic anatomical and physiological characteristics of life systems.
- c. Demonstrate knowledge of essential life processes such as metabolism, photosynthesis, respiration, sensitivity, digestion, circulation, reproduction, ecology, evolution, and behavior.
- d. List, identify, and analyze the information discussed in lecture and lab and use this data as a basis for reasoning, discussion, and calculation.
- e. Use the microscope and other laboratory instruments.

11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*

- a. Laboratory
- b. Lecture
- c. Participation

12. Assignments: *(List samples of specific activities/assignments students are expected to complete both in and outside of class.)*

In Class Hours: 108.00

Outside Class Hours: 108.00

a. In-class Assignments

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| <ol style="list-style-type: none"><li>1. Weekly quiz to assess student mastery of the previous week's laboratory.</li><li>2. Explanation of the laboratory meeting's exercise.</li></ol> |
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3. Laboratory exercises consisting of:  
 1. Practical study of representative examples (survey).  
 2. Performance or observation of experiments.

b. Out-of-class Assignments

1. Reading assignments based on lectures and current events in science.

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*

- Laboratory projects
- True/false/multiple choice examinations
- Student participation/contribution

14. Methods of Evaluating: Additional Assessment Information:

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

B: Biological Science with a Lab

CSU GE Area B: Physical and its Life Forms(mark all that apply)

B2 - Life Science

B3 - Laboratory Sciences

PO-GE C1-Natural Sciences

Explain concepts and theories related to physical, chemical, and biological natural phenomena.

Apply the scientific process and its use and limitations in the solution of problems.

Make critical judgments about the validity of scientific evidence and the applicability of scientific theories.

IO - Scientific Inquiry

Identify components of the scientific method.

Collect and analyze data. Skills of data collection include an understanding of the notion of hypothesis testing and specific methods of inquiry such as experimentation and systematic observation.

IO - Critical Thinking and Communication

Apply principles of logic to problem solve and reason with a fair and open mind.

16. Comparable Transfer Course

University System	Campus	Course Number	Course Title	Catalog Year
CSU	CSU San Bernardino	BIOL 100	Topics in Biology	2012-13

17. Special Materials and/or Equipment Required of Students:

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18. Materials Fees:  Required Material?

Material or Item	Cost Per Unit	Total Cost
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19. Provide Reasons for the Substantial Modifications or New Course:

ENG 70/71 Change

20. a. Cross-Listed Course (*Enter Course Code*): *N/A*  
 b. Replacement Course (*Enter original Course Code*): *N/A*

21. Grading Method (*choose one*): Letter Grade Only

22. MIS Course Data Elements

- a. Course Control Number [CB00]: CCC000313482  
 b. T.O.P. Code [CB03]: 40100.00 - Biology, General

# BI 004-Elements Of Biology

- c. Credit Status [CB04]: D - Credit - Degree Applicable
- d. Course Transfer Status [CB05]: A = Transfer to UC, CSU
- e. Basic Skills Status [CB08]: 2N = Not basic skills course
- f. Vocational Status [CB09]: Not Occupational
- g. Course Classification [CB11]: Y - Credit Course
- h. Special Class Status [CB13]: N - Not Special
- i. Course CAN Code [CB14]: N/A
- j. Course Prior to College Level [CB21]: Y = Not Applicable
- k. Course Noncredit Category [CB22]: Y - Not Applicable
- l. Funding Agency Category [CB23]: Y = Not Applicable
- m. Program Status [CB24]: 1 = Program Applicable

Name of Approved Program (if program-applicable): LIBERAL ARTS with emphasis in Math and Science  
*Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)*

## 23. Enrollment - Estimate Enrollment

First Year: 420

Third Year: 448

## 24. Resources - Faculty - Discipline and Other Qualifications:

a. Sufficient Faculty Resources: Yes

b. If No, list number of FTE needed to offer this course: N/A

## 25. Additional Equipment and/or Supplies Needed and Source of Funding.

N/A

## 26. Additional Construction or Modification of Existing Classroom Space Needed. (Explain:)

N/A

## 27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES

Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes

28. Originator Alexa Sawa Origination Date 11/14/17