

Course Outline of Record

1. Course Code: BI-006
2.
  - a. Long Course Title: Biology Of Organisms
  - b. Short Course Title: BIOLOGY OF ORGANISMS
3.
  - a. Catalog Course Description:
 

This course covers classification, development, physiology and regulation at the organismal level. Additional topics include population dynamics, community ecology, evolution and population genetics. This course is primarily designed for students pursuing careers in science, medicine, dentistry, veterinary medicine and other health fields requiring a strong foundation in biology. Together BI-006 and BI-005, Molecular and Cell Biology, provide students with the basic biology core curriculum for transfer.
  - b. Class Schedule Course Description:
 

An introduction to biology for science majors covering organismal biology and related topics with a laboratory component accompanying this course.
  - c. Semester Cycle (if applicable): Spring semester
  - d. Name of Approved Program(s):
    - BIOLOGY Associate in Science for Transfer Degree (AS-T)
4. Total Units: 5.00      Total Semester Hrs: 126.00  
 Lecture Units: 4      Semester Lecture Hrs: 72.00  
 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 (CCForm I-A)*

 Prerequisite: BI 004 or high school biology  
 Prerequisite: ENG 001A or concurrent enrollment and  
 Prerequisite: MATH 012 or concurrent enrollment
6. Textbooks, Required Reading or Software: (List in APA or MLA format.)
  - a. Reece, J.B., L.A. Urry, M.L. Cain, S.A. Wasserman, P.V. Minorsky, R.B. Jackson (2016). Campbell Biology (11th/e). Boston Pearson. ISBN: 9780134454665  
 College Level: Yes  
 Flesch-Kincaid reading level: 12
  - b. Morgan, J. and M. Carter. Investigating Biology Laboratory Manual COD Custom Version. Pearson , 01-01-2014.
7. Entrance Skills: *Before entering the course students must be able:*
  - a. Demonstrate an understanding of basic biological concepts.
    - BI 004 - Demonstrate an understanding of the concepts and principles of basic biology.
  - b. Demonstrate an understanding of the fundamental form and function of organismal systems.
    - BI 004 - Identify and explain basic anatomical and physiological characteristics of life systems.
  - c. Describe the basic diversity of living systems.
    - BI 004 - Identify and explain basic anatomical and physiological characteristics of life systems.
  - d. Demonstrate the ability to operate fundamental biology laboratory instrumentation (e.g. microscopes) and work independently when following laboratory protocol.
    - BI 004 - Use the microscope and other laboratory instruments.
  - e. Demonstrate the ability to represent and interpret biological data in graphical form.

- MATH 012 - Analyze parametric and polar equations, functions and graphs.

f. Demonstrate the ability to apply the concepts of mathematical limits to problems involving population dynamics and evolution.

- MATH 012 - Communicate mathematics effectively using proper terminology in both verbal and written expressions.

g. Demonstrate the ability to select, develop and organize ideas in a structured format.

- ENG 001A - Develop ideas coherently in writing through the drafting process.
- ENG 001A - Write thesis statements, topic sentences, and ideas in an organized way in multi-page essays.

8. Course Content and Scope:

Lecture:

1. Darwinian evolution including: pre-Darwinian views, the origin of Darwinism, signs of evolution, biogeography, the fossil record, comparative anatomy and embryology, molecular biology.
2. Macroevolution including: how fossils form, mechanisms of macroevolution, tracing phylogeny.
3. The origin of species including: reproductive barriers to speciation, biogeography of speciation, genetic mechanisms of speciation.
4. The origins of life including: early earth, abiotic synthesis of organic monomers and polymers, the formation of protobionts, the origins of genetic information.
5. The origins of eukaryotes and protists.
6. Plant diversity and the colonization of land, as well as plant structure, growth, and development.
7. Fungi, including: the diversity of fungi, ecological importance of fungi, evolution of fungi.
8. Invertebrates and the origin of animal diversity, including: defining "animals", and animal phylogeny.
9. Vertebrate genealogy, including: the origin of vertebrates.
10. Animal anatomy and physiology with an emphasis on human physiology, covering nutrition, circulation and gas exchange, osmoregulation and excretion, nervous system and sensory and motor mechanisms.
11. Ecology, including: the scope of ecology, terrestrial, freshwater, and marine biomes, environmental diversity of biomes, homeostasis and allocation.
12. Population ecology, including: density and dispersion, population growth, regulation of population size, human population growth.
13. Community ecology, including: population interactions, community structure, succession, conservation.
14. Ecosystems, including: trophic levels and food webs, energy flow, chemical cycling, human intrusions in ecosystem dynamics.

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

a. Animal behavior. b. Characteristics and diversity of protists. c. General characteristics of plants, plant life cycles, green algae as the ancestors of plants, diversity of plants. d. General characteristics of fungi, growth and reproduction of fungi, life cycles of fungi. e. Diversity of invertebrates. f. Diversity of vertebrates, development, and body plans. g. Plant anatomy.

9. Course Student Learning Outcomes:

1.  
Apply the scientific process.
2.  
Develop laboratory techniques (such as light microscopy, recording experimental data, 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 ecological relationships between organisms and their environments.

6.  
Describe the relationship between genetics and evolutionary theory.

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:*
- Describe various organismic classifications and their phylogenetic relationships.
  - Explain Darwinian evolution including: the origins of Darwinian evolution.
  - List and describe the signs of evolution including biogeography, the fossil record, comparative anatomy, comparative embryology, and molecular biology. Examine the evidence of evolution in the laboratory.
  - List and describe the major factors that influence macroevolution.
  - Explain how prezygotic and postzygotic reproductive barriers influence speciation.
  - Explain the major concepts of population dynamics.
  - Evaluate the adaptive nature of organismal systems to various environments and understand the ecological role of several taxons.
  - Describe the concepts in community ecology.
  - Explain the physiology of plants and animals and how homeostasis is maintained.
  - Describe the factors that influence population genetics and how they relate to evolution of populations.
  - Explain how protozoan, fungi, plants and animal life originated and evolved.
  - Identify a variety of protozoans, fungi, plants, and animals.
  - Describe the body systems, anatomy and functional physiology of several taxons.
  - Perform dissections to understand organismal anatomy.

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

- Laboratory
- Lecture
- Participation

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

In Class Hours: 126.00

Outside Class Hours: 144.00

a. In-class Assignments

- Lecture quizzes and lab quizzes.
- Lecture exams.
- Laboratory practicals.
- Laboratory exercises with data collection.

b. Out-of-class Assignments

- Written laboratory reports.

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:

# BI 006-Biology Of Organisms

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

B: Biological Science without a Lab

B: Biological Science, Lab only

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

B2 - Life Science

PO-GE C1-Natural Sciences

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

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

IO - Scientific Inquiry

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.

Analyze quantitative and qualitative information to make decisions, judgments, and pose questions.

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

Dissection Kit
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18. Materials Fees:  Required Material?

**Material or Item**

**Cost Per Unit**

**Total Cost**

19. Provide Reasons for the Substantial Modifications or New Course:

Course modification: Update to most recent textbook edition

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]: CCC000309875

b. T.O.P. Code [CB03]: 40100.00 - Biology, General

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*): BIOLOGY

*Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)*

23. Enrollment - Estimate Enrollment

First Year: 56

Third Year: 56

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 05/02/17