

BIO 16 Course Outline as of Fall 2024**CATALOG INFORMATION**

Dept and Nbr: BIO 16 Title: NON MAJOR BIOLOGY
 Full Title: Introduction to Biology For Non-Majors
 Last Reviewed: 10/23/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	4.00	Lab Scheduled	3.00	8	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	6.00		Contact Total	105.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 210.00

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

Catalog Description:

Students will be introduced to the core concepts of biology by studying current issues in modern biology with an emphasis on the scientific method and scientific literacy. Not intended for students majoring in biology.

Prerequisites/Corequisites:**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Students will be introduced to the core concepts of biology by studying current issues in modern biology with an emphasis on the scientific method and scientific literacy. Not intended for students majoring in biology. (Grade Only)

Prerequisites/Corequisites:

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area		Effective:	Inactive:
	C	Natural Sciences	Fall 2014	
CSU GE:	Transfer Area		Effective:	Inactive:
	B2	Life Science	Fall 2014	
	B3	Laboratory Activity		
IGETC:	Transfer Area		Effective:	Inactive:
	5B	Biological Sciences	Fall 2014	
	5C	Fulfills Lab Requirement		
CSU Transfer:	Transferable	Effective:	Fall 2014	Inactive:
UC Transfer:	Transferable	Effective:	Fall 2014	Inactive:

CID:

Certificate/Major Applicable:

Major Applicable Course

COURSE CONTENT

Student Learning Outcomes:

At the conclusion of this course, the student should be able to:

1. Apply the scientific method to investigating and evaluating biological phenomena
2. Explain the application of the core concepts of biology to current issues
3. Evaluate the scientific background of and debate on current biological issues
4. Demonstrate knowledge of laboratory and field biology techniques, including microscopy

Objectives:

At the conclusion of this course, the student should be able to:

1. Explain the scientific method and assess information about current scientific issues using this methodology
2. Compare and contrast science and pseudoscience
3. Assess the role of science in society
4. Demonstrate knowledge of each of the following core concepts: evolution, structure and function, flow of information, flow of matter, and systems biology
5. Apply core concepts to specific current issues in modern biology
6. Analyze and critically evaluate a current issue in biology and current events using the principles of the scientific method
7. Apply the steps in the scientific method for problem solving and biological investigation
8. Apply laboratory techniques, including proper microscope use, to observing and experimenting with biological phenomena

Topics and Scope:

Lecture-Related Topics and Scope:

- I. Science and the Scientific Method

- A. Science and the scientific process
- B. Science versus pseudoscience
- C. Science's role in and influence on society
- D. Assessment of the quality of scientific research
- E. The scientific method
 - 1. Experimental design
 - 2. Hypothesis testing
 - 3. Science writing
- II. Core Concepts of Biology
 - A. Evolution
 - 1. Natural selection
 - 2. Speciation
 - B. Structure and function
 - 1. Relationship of anatomy and physiology
 - 2. Role of natural selection
 - 3. Examples in cell biology, organismal biology, and evolutionary biology
 - C. Flow of information
 - 1. Molecular genetics
 - 2. Mendelian genetics
 - D. Flow of energy and matter
 - 1. Metabolism
 - 2. Physiology
 - 3. Biogeochemical cycles
 - 4. Energy movement in ecosystems
 - E. Systems biology: levels of biological organization
 - F. Applications of core concepts to current issues in biology

Lab-Related Topics and Scope:

- III. Laboratory Exercises
 - A. Compound and dissecting microscope use
 - B. Scientific method
 - C. Experimental design
 - D. Hypothesis testing
 - E. Enzyme structure and function
 - F. Properties of water
 - G. Molecular genetics
 - H. Mendelian genetics
 - I. Eukaryotic biodiversity

Assignment:

Lecture- and Lab-Related Assignments:

1. Written lecture exams (3-4) and lab exam(s) (1-2) covering biological content and applications to current issues in biology

Lecture-Related Assignments:

1. Assigned reading from text and instructor prepared material (10-30 pages/week)
2. Response papers (2-4) analyzing current issues in the context of the biological knowledge gained in the course (2-4 pages each)
3. Oral report on biological topics and their relationship to current events
4. Quizzes (5-10) on lecture and reading material

Lab-Related Assignments:

1. Participation in class exercises, analysis of case studies, and discussions relating to specific current biological topics and their relationship to current events

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Response papers

Writing
10 - 30%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Analysis of case studies

Problem solving
5 - 10%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations
0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Lecture exams and lab exams; quizzes

Exams
40 - 60%

Other: Includes any assessment tools that do not logically fit into the above categories.

Oral report; attendance; participation

Other Category
15 - 25%

Representative Textbooks and Materials:

Concepts of Biology. Current Edition. Folwer, Samantha, Roush, Rebecca, and Wise, James. Openstax. 2013 (Web version last updated 2023)

Campbell Essential Biology with Physiology. 6th ed. Simon, Eric, Dickey, Jean and Reece, Jane. Pearson. 2019.

ebook: Principles of Biology. Nature Publishing Group. 2012 (classic).

Instructor prepared lab manual and materials

Open Educational Resource (OER):

Concepts of Biology. Folwer, Samantha, Roush, Rebecca, and Wise, James.

<https://openstax.org/books/concepts-biology/pages/1-introduction> Creative Commons Attribution License v4.0