

BIOLOGY

Biology is the science of life and living organisms, including their structure, function, and growth. Courses in biological sciences satisfy general education requirements for the associate degree and lower division transfer and lead to associate degrees for transfer in biology and environmental science as well as associate degrees in biological science and in pre-allied health.

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<https://www.citruscollege.edu/academics/programs/biol> (<https://www.citruscollege.edu/academics/programs/biol/>)

Learning Outcomes

This discipline prepares students to do the following:

- Demonstrate an understanding of biological concepts. Acquire scientific information from multiple sources including textbooks, the Internet, etc.
- Estimate and/or calculate the characteristics of biological systems and demonstrate an understanding of these calculations in order to better understand the natural processes that produce these characteristics.
- Develop an understanding of relevant biological processes as well as processes from related sciences (e.g. physics, geology, chemistry)

and apply these processes to predict the properties of biological systems.

- Examine how human activity has contributed to positive and negative changes in the environment to better understand and discuss past, current, and future environmental issues through group discussions and examinations.

Courses

BIOL 102

Human Genetics

3 Units (AA/AS; Citrus B1; CSU; UC; IGETC 5B; CSUGE B2)

54 lecture hours

Grade Mode: Standard Letter

Strongly recommended: ENGL 101; Elementary algebra or higher or direct placement based on multiple measures.

General principles of genetics and reproduction in wellness and disease as applied in humans. Topics include Mendelian inheritance, variations on Mendelian inheritance, multifactorial traits, DNA structure, function, and replication, cell division, population genetics, evolution, immunity, cancer, and genetic technologies.

BIOL 105

General Biology

4 Units (AA/AS; Citrus B1; Citrus B3; CSU; UC; IGETC 5B; IGETC 5C; CSUGE B2; CSUGE B3)

54 lecture hours, 54 lab hours

Equivalent to: BIOL 105H, BIOL 106

Grade Mode: Standard Letter

Strongly recommended: High school biology or chemistry; high school algebra 1 or Integrated Math 1 or equivalent; ENGL 101.

A general biology course, lecture and laboratory, for non-majors, with emphasis upon molecular biology, cell structure and function, energy relationships, nutrient processing, reproduction and development, genetics and evolution, ecological interrelationships, and discussion of contemporary issues. The laboratory provides the student with expanded first-hand experience in specific areas of course content.

BIOL 105H

General Biology - Honors

4 Units (AA/AS; Citrus B1; Citrus B3; CSU; UC; IGETC 5B; IGETC 5C; CSUGE B2; CSUGE B3)

54 lecture hours, 54 lab hours

Equivalent to: BIOL 105

Grade Mode: Standard Letter

Prerequisite(s): Student must be eligible for the Citrus College Honors Program or obtain a recommendation from an Honors instructor.

Strongly recommended: High school biology or chemistry; high school algebra 1 or Integrated Math 1 or equivalent; ENGL 101.

This is a general biology course for non-majors, including both a lecture and laboratory component, which emphasizes molecular biology, cell structure and function, energy relationships, human physiological systems (including reproductive anatomy, reproductive cycles, development, and immunity), genetics, evolution, ecological interrelationships, and discussion of contemporary issues. The laboratory provides the student with expanded first-hand experience in specific areas of course content. Students are expected to work and participate at an honors level which includes strong critical thinking skills, through analysis of biological readings, presentations, and leadership skills demonstrated through class participation/presentation and service learning in community.

BIOL 108**Biology of Cancer****3 Units (AA/AS; Citrus B1; CSU; UC; IGETC 5B; CSUGE B2)****54 lecture hours****Grade Mode: Standard Letter***Prerequisite(s): Elementary algebra or higher or direct placement based on multiple measures.**Strongly recommended: ENGL 101.*

This course aims to give students a basic and big picture understanding about cancer. Topics include the genetic basis, hallmark characteristics, causes and avenues of prevention, and treatments of cancer. It is the hope that students who take this class will be better equipped to educate others on how to prevent cancer and distinguish science from myth regarding the disease.

BIOL 110**Field Biology****4 Units (AA/AS; Citrus B1; Citrus B3; CSU; UC; IGETC 5B; IGETC 5C; CSUGE B2; CSUGE B3)****54 lecture hours, 54 lab hours****Grade Mode: Standard Letter***Strongly recommended: High school biology or chemistry; high school algebra 1 or Integrated Math 1 or equivalent; ENGL 101.*

This general biology course is a hybrid lecture and laboratory course for non-majors. Lecture topics include: cell structure and function, energy relationships, nutrient processing, reproduction and development, evolution, and ecological interrelationships. The laboratory provides the student with expanded first-hand experience in specific areas of course content. Laboratory work will involve identification, analysis and ecological methods of observing and recording birds, mammals, amphibians, reptiles, trees and shrubs of Southern California. Required instructional trips.

BIOL 117**Biology of Infectious Diseases****3 Units (AA/AS; Citrus B1; CSU; UC; IGETC 5B; CSUGE B2)****54 lecture hours****Grade Mode: Standard Letter***Strongly recommended: ENGL 101.*

The focus of this course will be infectious diseases. Topics covered will include an overview of disease causing agents including bacteria, fungi, protozoans, helminths, and viruses. Common infectious diseases will be discussed including emerging infectious diseases. The impact of infectious diseases, historical and current, will also be considered along with a discussion on the transmission and spread of infectious diseases and how they can be controlled, prevented, and cured.

BIOL 124**Molecular and Cellular Biology****5 Units (AA/AS; Citrus B1; Citrus B3; CSU; UC; IGETC 5B; IGETC 5C; CSUGE B2; CSUGE B3)****72 lecture hours, 54 lab hours****Grade Mode: Standard Letter***Prerequisite(s): Intermediate algebra or higher or direct placement based on multiple measures.*

A principles of biology course designed for biology majors and pre-med. students. Detailed study of basic structure and function of living material, with emphasis on cell and molecular biology, genetic mechanisms and their control, reproduction and development, evolution.

BIOL 125**Evolution, Ecology & Biodiversity****5 Units (AA/AS; Citrus B1; Citrus B3; CSU; UC; IGETC 5B; IGETC 5C; CSUGE B2; CSUGE B3)****72 lecture hours, 54 lab hours****Grade Mode: Standard Letter***Prerequisite(s): Intermediate algebra or higher or direct placement based on multiple measures.*

A principles of biology course designed for biology majors and pre-med students. Detailed study of the structure and function of living material, with emphasis on the diversity of living material, animal and plant form, function, reproduction and development, evolution, and ecological relationships.

BIOL 145**Environmental Science****3 Units (AA/AS; Citrus B1; CSU; UC; IGETC 5B; CSUGE B2)****54 lecture hours****Grade Mode: Standard Letter***Strongly recommended: BIOL 105 or BIOL 105H; ENGL 101.*

A lecture course exploring contemporary global environmental concerns. Basic concepts covered will include the Earth's life support systems, population dynamics, environmental pollution, food production, and natural resource utilization. Emphasis will be placed on recognizing global environmental problems and exploring various solutions for them.

BIOL 200**Human Anatomy****4 Units (AA/AS; Citrus B1; Citrus B3; CSU; UC; IGETC 5B; IGETC 5C; CSUGE B2; CSUGE B3)****54 lecture hours, 54 lab hours****Grade Mode: Standard Letter***Prerequisite(s): BIOL 105 or BIOL 105H or BIOL 124.*

Biology 200 is a lecture/laboratory course in human anatomy focusing on the structures and organs of the human body. Students will be required to learn and understand the structures from the molecular to gross levels, using the microscope, standard anatomical (plastic) models, and preserved specimens (sheep heart, sheep brain, and cat). Required of pre-nursing students.

BIOL 201**Human Physiology****4 Units (AA/AS; Citrus B1; Citrus B3; CSU; UC; IGETC 5B; IGETC 5C; CSUGE B2; CSUGE B3)****54 lecture hours, 54 lab hours****Grade Mode: Standard Letter***Prerequisite(s): BIOL 200; CHEM 103 or CHEM 104 or CHEM 110 or CHEM 111 or CHEM 112.*

An advanced course in human physiology emphasizing muscle, nerve, circulation, respiration, excretion, digestion, and reproduction systems. Required of pre-nursing students.

BIOL 220**Microbiology**

5 Units (AA/AS; Citrus B1; Citrus B3; CSU; UC; IGETC 5B; IGETC 5C; CSUGE B2; CSUGE B3)

54 lecture hours, 108 lab hours

Grade Mode: Standard Letter

Prerequisite(s): BIOL 105 or BIOL 105H or BIOL 124; CHEM 103 or CHEM 104 or CHEM 110 or CHEM 111 or CHEM 112.

An introduction to the biology of microorganisms including bacteria, viruses, fungi, protozoa, and helminths. Metabolism, genetics, culture methods, identification, and control of common microbes are considered. Emphasis is placed on the virulence mechanisms and control of human pathogens and on the principles of immunology and host defense. Laboratory work includes techniques common to the control, culture, and identification of microbes. Required of pre-nursing students and medical technologists.

BIOL 698A**Cooperative Education**

1 Unit (AA/AS)

60 lab hours arranged

Grade Mode: Pass/No Pass, Standard Letter

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Biology at their place of volunteer employment or training sites.

BIOL 698B**Cooperative Education**

2 Units (AA/AS)

120 lab hours arranged

Grade Mode: Pass/No Pass, Standard Letter

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Biology at their place of volunteer employment or training sites.

BIOL 698C**Cooperative Education**

3 Units (AA/AS)

180 lab hours arranged

Grade Mode: Pass/No Pass, Standard Letter

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Biology at their place of volunteer employment or training sites.

BIOL 698D**Cooperative Education**

4 Units (AA/AS)

240 lab hours arranged

Grade Mode: Pass/No Pass, Standard Letter

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Biology at their place of volunteer employment or training sites.

BIOL 699A**Cooperative Education**

1 Unit (AA/AS)

75 lab hours arranged

Grade Mode: Pass/No Pass, Standard Letter

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Biology at their place of paid employment or training sites.

BIOL 699B**Cooperative Education**

2 Units (AA/AS)

150 lab hours arranged

Grade Mode: Pass/No Pass, Standard Letter

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Biology at their place of paid employment or training sites.

BIOL 699C**Cooperative Education**

3 Units (AA/AS)

225 lab hours arranged

Grade Mode: Pass/No Pass, Standard Letter

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Biology at their place of paid employment or training sites.

BIOL 699D**Cooperative Education**

4 Units (AA/AS)

300 lab hours arranged

Grade Mode: Pass/No Pass, Standard Letter

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Biology at their place of paid employment or training sites.

Programs

Associate Degrees

- ADT in Biology (<http://catalog.citruscollege.edu/disciplines/biology/biology-adt/>)
- ADT in Environmental Science (<http://catalog.citruscollege.edu/disciplines/biology/environmental-science-adt/>)
- A.S. in Biological Sciences (<http://catalog.citruscollege.edu/disciplines/biology/biological-sciences-as/>)
- A.S. in Pre-Allied Health (<http://catalog.citruscollege.edu/disciplines/biology/pre-allied-health-as/>)