# COURSES

## BIOLOGICAL SCIENCES COURSES

### BIO 1A - General Botany

**5 units**

Diversity, structure and function of plant, fungal, and protistan phyla. Topics include development, morphology, physiology and systematics. Principles of population and community ecology and ecosystem interactions. 54 hours lecture, 108 hours laboratory. AA/AS GE: II. Transfer: CSU, UC; CSUGE: B2, B3; IGETC: 5B, 5C; C-ID# BIOL 155, BIOL 135 S (if taken with BIO 1B+1C).

**Prerequisite:** Intermediate Algebra or a higher level of mathematics.

**Recommended Course Preparation:** BIO 30 with a minimum grade of C.

- Credit - Degree Applicable
- Grading Option: Letter Grade

### BIO 1B - General Zoology

**5 units**

Major groups of animal phyla and heterotrophic unicellular eukaryotes. Topics include comparative structure and function, development, ecology, taxonomy, phylogeny, evolution, and behavior. Designed for majors in biological sciences and related fields. 54 hours lecture, 108 hours laboratory. AA/ AS GE: II. Transfer: CSU, UC; CSUGE: B2, B3; IGETC: 5B, 5C; C-ID# BIOL 150, 135 S (if taken with BIO 1A+1C).

**Prerequisite:** Intermediate Algebra or a higher level of mathematics.

**Recommended Course Preparation:** BIO 30 with a minimum grade of C.

- Credit - Degree Applicable
- Grading Option: Letter Grade

### BIO 1C - Cell and Molecular Biology

**5 units**

Principles of cell and molecular biology. Includes biochemistry, cell structure and function, cell homeostasis, cell metabolism, cell reproduction, cell communication, genetics, molecular biology, biotechnology, and evolution. Emphasis on scientific inquiry and experimental design. 54 hours lecture, 108 hours laboratory. AA/AS GE: II. Transfer: CSU, UC; CSUGE: B2, B3; IGETC: 5B, 5C; C-ID# BIOL 190, BIOL 135 S (if taken with BIO 1A+1B).

**Prerequisite:** BIO 1B with a minimum grade or BIO 1A with a minimum grade of C. CHEM 1A with a minimum grade of C, Intermediate Algebra or a higher level of mathematics. Eligibility for college-level composition (ENG 1A, ENG 1AEX, or ESL 1A) as determined by college assessment or other appropriate method.

- Credit - Degree Applicable
- Grading Option: Letter Grade

### BIO 2A - Bioinformatics

**4 units**

Principles of Bioinformatics. Project-based course which will analyze complex biological data. The course introduces students to the tools used for computational exercises relevant to current biotechnologies and computational biology. Although BIO 30 can be taken as a prerequisite for BIO 2A, BIO 1C is required for the Computational Biology degree or certificate. 54 hours lecture, 54 hours laboratory. Transfer: CSU.

**Prerequisite:** BIO 30 with a minimum grade of C or BIO 1C with a minimum grade of C or CS 7 with a minimum grade of C or CS 1 with a minimum grade of C.

- Credit - Degree Applicable
- Grading Option: Letter Grade

### BIO 7A - Human Anatomy

**5 units**

Structural organization of the human body: gross and microscopic structure of the integumentary, skeletal, muscular, nervous, sensory, endocrine, cardiovascular, lymphatic, respiratory, digestive, excretory, and reproductive systems, from cellular to organ system levels of organization. This course is primarily intended for nursing, allied health, kinesiology, and other health related majors. 54 hours lecture, 108 hours laboratory. AA/AS GE: II. Transfer: CSU, UC*; CSUGE: B2, B3; IGETC: 5B, 5C; C-ID# BIOL 110 B. ** BIO 7A, 7B and 50 combined: maximum UC credit, two courses.*

**Prerequisite:** BIO 30 with a minimum grade of C or BIO 1B with a minimum grade of C and BIO 1C with a minimum grade of C. Eligibility for college-level composition (ENG 1A, ENG 1AEX, or ESL 1A) as determined by college assessment or other appropriate method. Eligibility for college-level mathematics as determined by college assessment or other appropriate method.

- Credit - Degree Applicable
- Grading Option: Letter Grade

### BIO 7B - Human Physiology

**5 units**

Function and regulation of the human body. This course examines general, cellular, and molecular interactions that integrate the organ systems to maintain homeostasis. Human responses and computer simulations are used to collect and analyze data. Designed for nursing, physical and occupational therapy, and other health sciences majors. 54 hours lecture, 108 hours laboratory. AA/AS GE: II. Transfer: CSU, UC*; CSUGE: B2, B3; IGETC: 5B, 5C; C-ID# BIOL 120 B. ** BIO 7A, 7B and 50 combined: maximum UC credit, two courses.*

**Prerequisite:** CHEM 1A with a minimum grade of C or CHEM 30A with a minimum grade of C or CHEM 31 with a minimum grade of C. BIO 7A with a minimum grade of C. BIO 30 with a minimum grade of C or BIO 1B with a minimum grade of C and BIO 1C with a minimum grade of C.

**Recommended Course Preparation:** CHEM 30B with a minimum grade of C. Eligibility for college-level composition (ENG 1A, ENG 1AEX, or ESL 1A) as determined by college assessment or other appropriate method. Eligibility for college-level mathematics (MATH 1, 2, 3, 5, 7, 10, 27, 30, 33, 34, 39, 40, 47) as determined by college assessment or other appropriate method.

- Credit - Degree Applicable
- Grading Option: Letter Grade

### BIO 7C - Microbiology

**5 units**

This course focuses on viruses, bacteria, fungi, protozoans, and helminths, with an emphasis on their relationship to humans. Cultivation, control, metabolism, body's defense against disease, microbial genetics, laboratory tests, and contemporary diseases are discussed. Methods used in the laboratory include standard bacteriological techniques (culturing, staining, biochemical testing, sensitivity testing etc.) as well as some molecular and immunological techniques, such as PCR and ELISA. Laboratory work also includes identification of unknowns, and/or independent research projects. 54 hours lecture, 108 hours laboratory. AA/AS GE: II. Transfer: CSU, UC; CSUGE: B2, B3; IGETC: 5B, 5C.

**Prerequisite:** BIO 30 with a minimum grade of C or BIO 1B with a minimum grade of C and BIO 1C with a minimum grade of C. CHEM 1A with a minimum grade of C or CHEM 30A with a minimum grade of C or CHEM 31 with a minimum grade of C.

**Recommended Course Preparation:** BIO 7A with a minimum grade of C. Eligibility for college-level composition (ENG 1A, ENG 1AEX, or ESL 1A) as determined by college assessment or other appropriate method. Eligibility for college-level mathematics (MATH 1, 2, 3, 5, 7, 10, 27, 30, 33, 34, 39, 40, 47) as determined by college assessment or other appropriate method.

- Credit - Degree Applicable
- Grading Option: Letter Grade

### BIO 10 - Introduction to the Science of Biology

**4 units**

This course focuses on basic principles of biology, including scientific investigation and the study of the nature of living things. Focus is on student understanding of evolution and the unity and diversity of life from the molecular level to ecosystems and biosphere. Designed for non-majors in biology and biomedical sciences. 54 hours lecture, 54 hours laboratory. AA/AS GE: II. Transfer: CSU, UC*; CSUGE: B2, B3; IGETC: 5B, 5C. ** BIO 10 and 30 combined: maximum UC credit, one course. No UC credit for BIO 10 or 30 if taken after 1C.*

- Credit - Degree Applicable
- Grading Option: Letter or P/NP

## BIO 20 - Contemporary Human Biology

**3 units**

A study of the Human organism, beginning at the cellular level, emphasizing organ systems, and also including topics of genetics and biotechnology. 54 hours lecture. AA/AS GE: II. Transfer: CSU, UC; CSUGE: B2; IGETC: 5B.

- Credit - Degree Applicable
- Grading Option: Letter Grade

## BIO 29B - Independent Study, Biology

**0.5 - 2 units**

Supervised study in the area of Biology. Any student interested in registering for an Independent Studies course should contact a full/part-time instructor or dean in the appropriate area. 27-108 hours laboratory. Transfer: CSU.

- Credit - Degree Applicable
- Grading Option: Letter or P/NP

## BIO 29T - Independent Study, Botany

**0.5 - 2 units**

Supervised study in the area of Botany. Any student interested in registering for an Independent Studies course should contact a full/part-time instructor or dean in the appropriate area. 27-108 hours laboratory. Transfer: CSU.

- Credit - Degree Applicable
- Grading Option: Letter or P/NP

## BIO 29Z - Independent Study, Zoology

**0.5 - 2 units**

Supervised study in the area of Zoology. Any student interested in registering for an Independent Studies course should contact a full/part-time instructor or dean in the appropriate area. 27-108 hours laboratory. Transfer: CSU.

- Credit - Degree Applicable
- Grading Option: Letter or P/NP

## BIO 30 - Introduction to College Biology

**4 units**

Basic principles of biology. Cell structure and function, cell division, cell metabolism, reproduction, genetics, taxonomy, origin of life, and evolution. Laboratory emphasis on developing various laboratory skills, using the metric system, collecting data, graphing, interpreting data, and preparing for and taking laboratory exams. Designed to prepare the necessary concepts and laboratory skills and experience that are needed to succeed in more advanced courses in biology. 54 hours lecture, 54 hours laboratory. AA/AS GE: II. Transfer: CSU, UC*; CSUGE: B2, B3; IGETC: 5B, 5C. ** BIO 10 and 30 combined: maximum UC credit, one course. No UC credit for BIO 10 or 30 if taken after 1C.*

- Credit - Degree Applicable
- Grading Option: Letter Grade

## BIO 40 - Humans and the Environment

**3 units**

Introduction to environmental issues from a scientific perspective, focusing on physical, chemical, and biological processes within the Earth system, the interaction between humans and these processes, and the role of science in finding sustainable solutions. Topics include ecological principles, biodiversity, climate change, sustainability, renewable and non-renewable energy, water resources, air and water pollution, and solid waste management. 54 hours lecture. AA/AS GE: II. Transfer: CSU, UC; CSUGE: B2; IGETC: 5B.

**Recommended Course Preparation:** Eligibility for ENG 1A.

- Credit - Degree Applicable
- Grading Option: Letter or P/NP

## BIO 50 - Anatomy and Physiology

**4 units**

Structure and function of the human body is studied. Emphasis on human anatomy and physiological principles at the cellular and systemic level. Designed primarily for majors in paramedic and medical assisting programs and pre-medical students who wish to explore the realm of anatomy and physiology. 54 hours lecture, 54 hours laboratory. AA/AS GE: II. Transfer: CSU, UC*; CSUGE: B2, B3; IGETC: 5B, 5C. ** BIO 7A, 7B and 50 combined: maximum UC credit, two courses.*

- Credit - Degree Applicable
- Grading Option: Letter Grade

## BIO 55 - Orientation to Health Care

**2 units**

Examine physiological, psychological, ethical, social, and public health issues. Introduce the workings of the human body and mind and explore the relationship between health and larger cultural and societal issues. Introduce medical terminology. Review diseases, including causes, symptoms, how they affect the body systems, and treatment options available. Investigate, analyze, and evaluate professional opportunities, educational requirements and personal characteristics with the intent to acquire insight into careers in the allied health field, with specific focus on transfer science, clinical programs (pre-nursing, EMT, surgical technology, medical assisting), and health administrative support. Gain the academic framework and perspective necessary to pursue a career in health sciences, as well as benefit anyone confronting health care issues in today's complex world. 36 hours lecture. AA GE: VB. Transfer: CSU; CSUGE: E.

- Credit - Degree Applicable
- Grading Option: Letter or P/NP

## BIO 60 - Marine Biology

**4 units**

Ocean as a habitat, the organisms that inhabit marine waters, their ecology, adaptations and evolution, and the role of the ocean in the ecology of the biosphere. 54 hours lecture, 54 hours laboratory. AA/AS GE: II. Transfer: CSU, UC; CSUGE: B2, B3; IGETC: 5B, 5C.

- Credit - Degree Applicable
- Grading Option: Letter or P/NP

## BIO 70 - Field Biology

**3 units**

A hands-on course in field biology. Students will learn basic concepts about ecology and environmental science through outdoor activities and exploration of a variety of ecosystems. The goals are to gain experience and develop skills in the following areas: identification of plants and animals, first-hand knowledge of a wide array of organism life histories, quantitative field research techniques and procedures applicable to plants and animals, and methods of recording data and observations. Field trips to local and regional habitats focus on seasonally relevant events, processes, and appropriate methodologies to study these communities. 36 hours lecture, 54 hours laboratory. AA/AS GE: II. Transfer: CSU; CSUGE: B2, B3.

- Credit - Degree Applicable
- Grading Option: Letter Grade