BIOLOGY (BIOL)

BIOL 100
PRINCIPLES OF BIOLOGY
3 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Corequisite: BIOL 101.
Lecture 3 hours
Offered: ALL
Surveys the basic processes of biology which are common to all organisms. Includes scientific method, biomolecules, cellular organization, structure, function, metabolism, and reproduction, genetics, evolution, taxonomic classification, ecology of plants and animals, and current events involving biology. Not intended for biology majors. [D; CSU; UC]

BIOL 101
PRINCIPLES OF BIOLOGY LABORATORY
1 UNIT

Grade Only
Recommended Preparation: ENGL C1000 or equivalent; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Corequisite: BIOL 100.
Laboratory 3 hours
Offered: ALL
Provides laboratory experience to supplement Biology 100. May require field trips during laboratory periods. [D; CSU; UC]

BIOL 111
CANCER BIOLOGY
3 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours
Offered: FALL, SPRING
Introduces a broad understanding of cancer, focusing on the molecular and cellular changes that normal cells undergo during their transformation into malignant cancer cells. Explores risk factors, signs and symptoms of cancer, and the social impact of this disease. [D; CSU; UC]

BIOL 130
ANIMAL BIOLOGY: A BEHAVIORAL APPROACH
3 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Recommended Concurrent Enrollment: BIOL 131.
Lecture 3 hours
Offered: FALL
Provides basic biological principles applied to the study of animals. Includes a study of the history, genetics, physiology, and ecology of animal behaviors from an evolutionary perspective. [D; CSU; UC]

BIOL 131
ANIMAL BIOLOGY LABORATORY
1 UNIT

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Corequisite: BIOL 130 (may be taken previously).
Laboratory 3 hours
Offered: FALL
Provides laboratory and field exercises to supplement and support BIOL 130. Introduces the student to research techniques illustrating the basic concepts of animal biology. Includes activities such as structured laboratory experiments, field observations, ethogram, and an independent project. [D; CSU; UC]

BIOL 140
ENVIRONMENTAL BIOLOGY
3 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours
Offered: FALL, SPRING
Provides environmental biology with a global emphasis. Investigates environmental interrelationships and impacts of human activities on ecosystems and on global quality of life. Focuses on population dynamics, biological diversity, global environmental change, pollution, natural resources, impacts of agriculture, industrialization, technology, and energy use. Field trips may be required. [D; CSU; UC]

BIOL 143
BIOLOGY, OCEANOGRAPHY, AND GEOSCIENCE OF BAJA CALIFORNIA
3 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: RDG 56 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours
Offered: FALL
Provides an interdisciplinary, introductory survey of Baja California's diversity in its biology, oceanography, geology, geography, and demographics. Examines the management, use, and conservation of its natural resources. Investigates regional issues associated with increased population, modernization, and industrialization of Baja California and Southern California. [D; CSU; UC]

BIOL 145
ECOMUNDO: ECOLOGY AND ENVIRONMENTAL SCIENCE
3 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours
Offered: SPRING
Features basic concepts and science processes in ecology with an emphasis on international borders, regional, and global environmental interactions and issues. Focuses on scientific, economic, social, psychological, legal, and health aspects of population dynamics, pollution, solid waste, sewage, water quality, ecotourism, wildlife, land, and energy use. Includes field trips. [D; CSU; UC]

BIOL 146
ECOMUNDO: FIELD STUDIES AND LABORATORY INVESTIGATIONS IN ECOLOGY AND ENVIRONMENTAL SCIENCE
1 UNIT

Pass/No Pass or Grade is Allowed
Recommended Preparation: RDG 56 or equivalent or through the Southwestern College multiple measures placement processes.
Recommended Concurrent Enrollment: BIOL 145.
Laboratory 3 hours
Offered: ALL
Field and laboratory investigations of the ecology of selected geographic regions with an emphasis on the ecological relationships on the region's animal and plant species, the impact of humans on the region's ecosystems, and the use of scientific methodologies and principles of ecology and environmental science. Field trips required. [D; CSU; UC]

BIOL 150
NATURAL HISTORY OF PLANTS AND ANIMALS
4 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours, laboratory 3 hours
Offered: SPRING
Provides field and laboratory survey of San Diego's plant and animals, training in the collection and analysis of data, observation of animal behaviors, and identification of species. Emphasizes ecology and ecosystems. Designed for students with little field experience in biology and is appropriate for teachers of outdoor programs. [D; CSU; UC]

BIOL 151
INTRODUCTION TO FERMENTATION SCIENCE
3 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: Elementary algebra proficiency, as determined through the Southwestern College Multiple Measures Process; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours
Offered: FALL, SPRING
Surveys the basic processes of biology which are common to all organisms with a focus on cellular functions and metabolism for understanding fermentation. Includes scientific method, biomolecules, cellular organization, structure, function, metabolism, and reproduction, genetics, evolution, and current events involving biology and the societal impacts of fermentation. Not intended for biology or chemistry majors. [D; CSU; UC] (Same as: CHEM 151)

BIOL 151L
INTRODUCTION TO FERMENTATION SCIENCE LAB
1 UNIT

Pass/No Pass or Grade is Allowed
Recommended Preparation: Elementary algebra proficiency, as determined through the Southwestern College Multiple Measures Process; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Corequisite: BIOL 151 or CHEM 151 or BIOL 101 or BIOL 210 or BIOL 211 or CHEM 100 or CHEM 102 or CHEM 170 (may be taken previously).
Laboratory 3 hours
Offered: FALL, SPRING
Provides laboratory experience to supplement BIOL 151/CHEM 151. Stresses the application of the Scientific Method and the Engineering Process in a laboratory setting employing project-based learning including: hypothesis generation and testing; troubleshooting; and process optimization as applied to the technically complex process of brewing beer. Introduction to safety, the quantitative use of common laboratory glassware, instrumentation and techniques that includes the use of; volumetric glassware and pipettes; hydrometers; top loading and analytical balances; colorimetric analyses; refractometers; and sterile techniques. [D; CSU; UC] (Same as: CHEM 151L)

BIOL 160
MARINE BIOLOGY
3 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Recommended Concurrent Enrollment: BIOL 161.
Lecture 3 hours
Offered: SPRING
Introduces the student to the marine environment and to the biology of marine organisms. Provides a survey of marine ecosystems based on physical, chemical, geological, and biological oceanography. Includes major themes such as evolution, adaptation, classification, and interactions of organisms, marine ecology, and current issues in marine biology. [D; CSU; UC]

BIOL 161
MARINE BIOLOGY LABORATORY
1 UNIT

Pass/No Pass or Grade is Allowed
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Corequisite: BIOL 160 (may be taken previously).
Laboratory 3 hours
Offered: SPRING
Provides laboratory and field exercises to supplement and support Biology 160. Introduces the student to the biology and adaptations of marine organisms and surveys local marine ecosystems. Field observation and data analysis are integral components of this course. [D; CSU; UC]

BIOL 180
HUMAN HEREDITY, EVOLUTION, AND SOCIETY
3 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours
Offered: FALL, SPRING
Introduces principles and applications of human heredity. Includes Mendelian and molecular genetics, cell reproduction, genetic and chromosomal mutations and disorders, structure and function of DNA and RNA, genetic engineering, and the application of genetics to the study of evolution of species, and the origin of humans. [D; CSU; UC]

BIOL 185
BIOLOGY OF ALCOHOL AND OTHER DRUGS
3 UNITS

Pass/No Pass or Grade is Allowed
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours
Offered: ALL
Emphasizes the study of the biological principles underlying the effects of major legal and illegal drugs on the human body. Surveys the commonly abused drugs with regard to their chemical nature, where and how they act, and the factors that modify their effects. [D; CSU; UC]

BIOL 190
HUMAN ANATOMY AND PHYSIOLOGY
4 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes; MATH 45 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours, laboratory 3 hours
Offered: ALL
Introduces human anatomy and physiology, including structural-functional relationships, scientific method, precise terminology, and related human conditions and diseases. (Not open to students with credit for or concurrent enrollment in BIOL 260 or BIOL 261.) [D; CSU; UC]

BIOL 205
DNA SCIENCE I
2 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 2 hours
Offered: FALL
Provides theoretical background useful in the biotechnology job market or for a bachelor's degree in biology. [D; CSU]

BIOL 206
DNA SCIENCE II
2 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Recommended Concurrent Enrollment: BIOL 211.
Prerequisite: BIOL 205 or equivalent.
Lecture 2 hours
Offered: SPRING
Provides theoretical background useful in the biotechnology job market or for a bachelor's degree in biology. [D; CSU]

BIOL 207
INTRODUCTION TO BIOINFORMATICS
3 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours
Offered: SPRING
Provides an analysis of genes, proteins, and genomes. Examines the broad question of information flow in biology and the history and criticism of defining a gene. Introduces the fundamentals of computer-based analysis of gene and protein database organization, retrieval, and search rules. [D; CSU; UC]

BIOL 210
GENERAL ZOOLOGY
4 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Prerequisite: MATH 62 or MATH 72 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 2 hours, laboratory 6 hours
Offered: FALL, SPRING
Explores general zoology for biological science and related majors. Surveys major animal phyla and heterotrophic protistans from an evolutionary perspective. Covers comparative structure, morphology, anatomy and function of animals. Includes topics on phylogeny, cladistics, systematics, principles and mechanisms of evolution, animal behavior, biodiversity and population ecology. [D; CSU; UC; C-ID BIOL 150]

BIOL 211
INTRODUCTION TO CELL AND MOLECULAR BIOLOGY
4 UNITS

Grade Only
Recommended Preparation: BIOL 210 or equivalent; ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Prerequisite: CHEM 170 or CHEM 200 or equivalent; MATH 62 or MATH 72 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours, laboratory 3 hours
Offered: FALL, SPRING
Introduces basic principles of cell and molecular biology for biology and related science majors. Emphasizes basic atomic structure and bonding, the chemical basis of life, cell structure and function, energy transformation, cell division, genetics, genomics, bioinformatics, and the origin of life. [D; CSU; UC; C-ID BIOL 190]

BIOL 212
BIOLOGY OF PLANTS
4 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Prerequisite: BIOL 211 or equivalent; CHEM 170 or CHEM 200 or equivalent; MATH 62 or MATH 72 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 3 hours, laboratory 3 hours
Offered: FALL, SPRING
This course is intended for biology majors. Provides the comparative study of plants, protistan and fungal groups emphasizing their diversity, evolution, structure, function, growth, and metabolic pathways. Includes plant genomics, taxonomy, systematics, morphology, physiology, cytology, population-community ecology, local ecosystems, evolution of populations, global importance of autotrophs. [D; CSU; UC; C-ID BIOL 155]

BIOL 215
BIOSTATISTICS
3 UNITS

Grade Only
Prerequisite: MATH 122 or MATH 244 or equivalent or through the Southwestern College multiple measures placement processes; BIOL 210 or BIOL 211 or equivalent.
Lecture 2 hours, laboratory 3 hours
Offered: ALL
Introduces basic probability, descriptive, and inferential statistics. Includes experimental design, collection of data, and selection of appropriate statistical tests used to analyze data, solve quantitative problems, and test hypotheses using biological examples. [D; CSU; UC]

BIOL 229
INTRODUCTION TO BIOLOGICAL RESEARCH I
3 UNITS

Grade Only
Recommended Preparation: CHEM 100 or equivalent; ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Recommended Concurrent Enrollment: CHEM 170 or equivalent.
Prerequisite: MATH 62 or MATH 72 or equivalent or through the Southwestern College multiple measures placement processes.
Lecture 2 hours, laboratory 3 hours
Offered: ALL
Introduces biological laboratory skills, safety procedures, and disposal of laboratory waste materials; experimental design and data analysis; preparation of laboratory reagents; aseptic technique, chromatography and electrophoresis; maintenance of laboratory records, library research, and resume writing; and management of a research laboratory. [D; CSU; UC]

BIOL 230
INTRODUCTION TO BIOLOGICAL RESEARCH II
3 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Prerequisite: BIOL 211 or BIOL 229 or equivalent; MATH 62 or MATH 72 or equivalent or through the Southwestern College multiple measures placement processes.
Corequisite: CHEM 170 (may be taken previously).
Lecture 2 hours, laboratory 3 hours
Offered: SPRING
Emphasizes current concepts and laboratory training in modern molecular biological techniques. Designed for biology majors and students interested in working in a molecular biology and/or biotechnology industry laboratory. [D; CSU]

BIOL 260
HUMAN ANATOMY
4 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Prerequisite: BIOL 100 and BIOL 101, or equivalent.
Lecture 2 hours, laboratory 6 hours
Offered: ALL
Emphasizes a systematic study of fundamental principles of human anatomy at cellular, tissue, organ, and organ system levels of organization. Introduces precise terminology, structural-functional relationships, scientific method, and appreciation of related human diseases. Laboratory uses preserved animal and organ dissection, skeletal study, models, and other visual aids. [D; CSU; UC; C-ID BIOL 110B]

BIOL 261
PRINCIPLES OF HUMAN PHYSIOLOGY
4 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Prerequisite: BIOL 260 or equivalent; CHEM 100, CHEM 102, or CHEM 170, or equivalent.
Lecture 3 hours, laboratory 3 hours
Offered: ALL
Studies physiological principles, functions, integration and homeostasis of the human body at the cellular, tissue, organ, organ system, and organism level: integumentary, skeletal, muscular, nervous, sensory, cardiovascular, lymphatic, immune, respiratory, urinary, digestive, endocrine, and reproductive systems. This course is primarily intended for Nursing and Allied Health-related majors. [D; CSU; UC; C-ID BIOL 120B]

BIOL 265
GENERAL MICROBIOLOGY
4 UNITS

Grade Only
Recommended Preparation: ENGL C1000 or equivalent or through the Southwestern College multiple measures placement processes; RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.
Prerequisite: BIOL 100 and BIOL 101, or equivalent; CHEM 100, CHEM 102, or CHEM 170, or equivalent.
Lecture 2 hours, laboratory 6 hours
Offered: ALL
Introduces fundamental concepts, methods, and relevant applications of microbiology, including microbial structure, physiology, genetics, epidemiology, agents of disease, mechanisms of pathogenesis and resistance, approaches to control and treatment of disease, immunology, and biotechnology. Emphasizes laboratory activities, stressing cultivation, characterization, identification, and biotechnological applications involving microbes important in clinical medicine. [D; CSU; UC]

BIOL 266
BIOMEDICAL WET LAB EXPERIENCE
1 UNIT

Grade Only
Corequisite: CHEM 100 or CHEM 170 (may be taken previously); CHEM 102 or CHEM 110 (may be taken previously); BIOL 260 (may be taken previously); BIOL 261 (may be taken previously); BIOL 265 (may be taken previously).
Laboratory 3 hours
Offered: ALL
Provides wet lab experiences to support chemistry, human anatomy, human physiology and general microbiology prerequisite courses for majors pursuing allied health professions. Intended for students who took chemistry and biology prerequisite courses through distance education lacking a wet lab component. [D; CSU; UC] (Same as: CHEM 266)

BIOL 299
INDEPENDENT STUDY
1-3 UNITS

Pass/No Pass or Grade is Allowed
Limitation on Enrollment: Eligibility for independent study.
Lecture 3 hours
Offered: ALL
Individual study or research in some area of the biological sciences of particular interest to the student and not included in regular courses of the college. [D; CSU; **UC] (**UC Limitation: credit for variable topics courses is given only after a review of the scope and content of the courses by the enrolling UC campus.)