BIOLOGICAL SCIENCES

Career Opportunities

(Most careers require a bachelor and advanced degree)

Biological Technician
Health Technician
Clinical Lab Technologist
Marine Biology
Environmental Policy
Biotechnology
Zoology
Public Health Biologist
Laboratory Technician
Research Technician
Forestry & Wildlife Biology
Ecology
Fisheries

Faculty

Full-Time

Michael Abram
Louise Zitnik
Lorraine Buckley

Part-Time

Nicholaas Boshoff
Kimberly Jesu
Cori Newton
Jan Schienle
Joe Frantz
Regina Migler
Michael Nicholson
Neil Ziegler

◆ Biology

Associate in Arts Degree

Core Courses:		**Units**
BIOL R120	Principles of Biology I	4
BIOL R120L	Principles of Biology I Lab	1
BIOL R122	Principles of Biology II	4
BIOL R122L	Principles of Biology II Lab	1
BIOL R199	Directed Studies in Biology	2
	Required Units from Core Courses	**12**

Elective Courses: **Units**

Students must select at least 15 units from Group A and at least 13 units from Group B.

Group A:		
CHEM R120	General Chemistry I	5
CHEM R122	General Chemistry II	5
CHEM R130	Organic Chemistry I	5
MATH R105	Introductory Statistics	4
MATH R120	Calculus with Analytic Geometry I	5
MATH R121	Calculus with Analytic Geometry II	5
PHYS R131	Physics for Scientists & Engineers 1	5
PHYS R132	Physics for Scientists & Engineers 2	5
Group B:		
BIOL R130	Biochemistry	3
BIOL R135	Molecular Biology	3
BIOL R135L	Molecular Biology Laboratory	2
BIOL R140L	Tissue Culture Laboratory	3
BIOL R145L	Applied Microbiology Laboratory	3
BIOL R150L	Biotechnology Laboratory	3
BIOL R170	Biological Marine Resource Management	1
MICR R100	Principles of Microbiology	3
MICR R100L	Principles of Microbiology Lab	2
PHSO R100	Human Physiology	3
PHSO R100L	Human Physiology Lab	2
	Required Units from Elective Groups A & B	**28**
	Total Required Units	**40**

Anatomy Courses

ANAT R100—General Human Anatomy **2 units**

Prerequisites: BIOL R101 or BIOL R120.
2 hours lecture weekly

This course is an introduction to gross anatomy as well as organization and histology of human organ systems. It is appropriate and meets the requirements for students anticipating transfer to medical school, dental school or other health care and kinesiology programs. This course is fundamental for students entering studies in most general biology fields. Field trips may be required. (2)

Transfer credit: UC, CSU (CAN: BIOL 10 (ANAT R100 + R100L)

ANAT R100L—General Human Anatomy Laboratory **2 units**

Prerequisites: BIOL R101 or BIOL R120.
Corequisites: ANAT R100.
6 hours lab weekly

This is a laboratory course to accompany ANAT R100. Laboratory experiments and demonstrations will be used to illustrate the principles and concepts of anatomy. Experiments include but are not limited to laboratory dissection of the cat and demonstration of the dissected human cadaver. Field trips may be required. (2)

Transfer credit: UC, CSU (CAN: BIOL 10 (ANAT R100 + R100L)

Biology Courses

BIOL R098—Short Courses in Biology **½-10 units**

Lecture and/or lab hours as required by unit formula

Specialized topics designed to inform or update interested persons in the various disciplines within the Biological Sciences.

BIOL R100—Marine Biology **3 units**

3 hours lecture weekly

This survey course includes an introduction to ecology, organism identification, anatomy, physiology, and conservation of marine organisms. Applications of the scientific method in marine biology are emphasized. Field trips may be required. (Same as MST R100) (2)

Transfer credit: UC, CSU

BIOL R100L—Marine Biology Laboratory **1 unit**

Prerequisites: BIOL R100 or concurrent enrollment.
3 hours lab weekly

This survey course includes laboratory and field studies of marine organisms and their environment, the use of the scientific method, and basic biological skills. Optional field trips may be required. (Same as MST R100L) (2)

Transfer credit: UC, CSU

BIOL R101—General Biology **3 units**

3 hours lecture weekly

This is a survey course that presents the major principles and phenomena governing biological systems. Topics include biological chemistry, the cellular basis of life, metabolism, nutrition, reproduction, genetics, DNA modification, evolution and recombinant DNA technologies. This course is designed for non-biology majors. It will satisfy the requirements for certain dental hygiene, nursing and physical therapy programs. Field trips may be required.

Transfer credit: UC, CSU

BIOL R101L—General Biology Laboratory **1 unit**

Prerequisites: BIOL R101 or concurrent enrollment.
3 hours lab weekly

This is a laboratory course designed to be taken in conjunction with BIOL R101. The laboratory exercises deal with the scientific method, basic biochemistry, microscopy, cellular organization, cellular energy transformation, molecular genetics and evolution. Field trips may be required. (2)

Transfer credit: UC, CSU

BIOL R106—The Human Environment **3 units**

3 hours lecture weekly

Study of biotic principles which form the basis for understanding the relationship of human beings and their environment; includes human ecology, population and pollution problems, human genetics, biology of race, and human evolution and behavior. (2)

Transfer credit: UC, CSU

BIOL R106L—Human Environment Laboratory **1 unit**

Prerequisites: BIOL R106 or concurrent enrollment.
3 hours lab weekly

Laboratory studies of basic ecological principles and environmental problems. Topics include soil, water, and air analysis, population dynamics, health effects of pollution and conservation of resources. (2)

Transfer credit: UC, CSU

BIOL R120—Principles of Biology I **4 units**

Prerequisites: CHEM R120.
4 hours lecture weekly

The principles of molecular and cellular biology are presented. An emphasis will be placed on the diversity of organisms. This course is designed for biological science majors. It is intended to fulfill the requirements for the first year of the biology curriculum and to prepare students entering related science curricula. It is not intended for non-majors. Field trips may be required.

Transfer credit: UC, CSU (CAN: BIOL 2 (BIOL R120 + R120L)

BIOL R120L—Principles of Biology I Lab: Intro to Cellular and Molecular Biology **1 unit**

Prerequisites: BIOL R120 or concurrent enrollment.
3 hours lab weekly

This is a laboratory course designed to complement BIOL R120. The current methods employed by investigators in the biological sciences are presented. These include, but are not limited, to microscopy, differential centrifugation, chromatography, electrophoresis, spectrophotometry and nucleic acid hybridization. This course is recommended for biological sciences majors seeking transfer to university programs as well as students anticipating careers in a broad range of health care professions. Field trips may be required. (2)

Transfer credit: UC, CSU (CAN: BIOL 2 (BIOL R120 + R120L)

BIOL R122—Principles of Biology II **4 units**

Prerequisites: BIOL R120 and BIOL R120L.
4 hours lecture weekly

This course is designed to complete the study of basic principles of biology for biological science majors. Topics include the diversity and evolutionary relationships of the major plant divisions and animal phyla. Emphasis is placed on evolution of as well as the development, structure and functions of vertebrate organ systems. Ecosystem structure, population ecology and evolutionary concepts are presented. Field trips may be required.

Transfer credit: UC, CSU

BIOL R122L—Principles of Biology II Lab **1 unit**

Prerequisites: BIOL R120 and BIOL R120L or equivalent; BIOL R122 or concurrent enrollment.
3 hours lab weekly

This course is designed to complete the study of basic principles of biology laboratory for biological science majors. Topics include the diversity and evolutionary relationships of the fungi, major plant divisions, and animal phyla. Dissections of representative organisms are required. Emphasis is placed on the development, structure and functions of vertebrate organ systems. Ecosystem structure, population ecology, and evolutionary concepts are presented. Field trips may be required. (2)

Transfer credit: UC, CSU

BIOL R130—Biochemistry **3 units**

Prerequisites: CHEM R130 or equivalent.
3 hours lecture weekly

Lower division biochemistry. An introduction to biochemicals, biochemical design, cellular metabolism, and the regulation of that metabolism.

Transfer credit: UC, CSU

BIOL R135—Molecular Biology **3 units**

Prerequisites: BIOL R130 or concurrent enrollment.
3 hours lecture weekly

Basic molecular biological properties of proteins and nucleic acids.

Transfer credit: UC, CSU

BIOL R135L—Molecular Biology Laboratory **2 units**

Prerequisites: BIOL R135 or concurrent enrollment.
6 hours lab weekly

Basic molecular biological techniques as applied to the manipulation of proteins and nucleic acids.

Transfer credit: UC, CSU

BIOL R140L—Tissue Culture Laboratory **3 units**

Prerequisites: BIOL R120L.
1 hour lecture, 6 hours lab weekly

A presentation of the basic laboratory techniques employed for plant and animal tissue, organ culture preparation, propagation, and storage. The principles of plant and animal virus cultivation and quantitation will also be investigated.

Transfer credit: CSU

BIOL R145L—Applied Microbiology Laboratory **3 units**

Prerequisites: MICR R100L.
1 hour lecture, 6 hours lab weekly

Presentation of organic chemical and immunologic techniques as they apply to the discipline of microbiology. Emphasis will be placed on microbial ecology, clinical bacteriology, industrial fermentation, and bio-remediation.

Transfer credit: CSU

BIOL R150L—Biotechnology Laboratory **3 units**

Prerequisites: BIOL R135L.
1 hour lecture, 6 hours lab weekly

Application of molecular biological techniques for the biotechnology laboratory. Presentation of skills and methodologies required to set up and operate commercial biotechnology facility.

Transfer credit: CSU

BIOL R170—Biological Marine Resource Management **1 unit**

Corequisites: GEOL R178.
3 hours lab weekly

Topics in marine biology related to current resource management issues in this region. Study of requirements and applications of federal, state, and local laws and regulations related to marine resource management. Application of the scientific method to questions about marine resources. Field trips will be to natural areas where geological, biological, and oceanographic interactions can be observed. Course may be taken four times. (Same as MST R170) (2)

Transfer credit: CSU

BIOL R198—Topics in Biology **½-10 units**

Lecture and/or lab hours as required by unit formula

Designed to meet specific needs of college and community, as required and requested by persons whose needs in this area are not met by present course offerings. (2)

Transfer credit: CSU

BIOL R199—Directed Studies in Biology **1-3 units**

Lecture and/or lab hours as required by unit formula

Designed for students interested in furthering their knowledge of Biology on an independent study basis. All studies will require laboratory and library research, as well as written reports. Course may be taken two times.

Transfer credit: CSU

Botany Courses

BOT R100—Principles of Botany **4 units**

Prerequisites: BIOL R120.
4 hours lecture weekly

Introduction to structure, physiology and evolutionary history of the major plant divisions. Topics to include growth transport, genetics, nutrition, tropisms, reproduction, ecology, and control systems, speciation, adaptive radiation.

Transfer credit: UC, CSU

BOT R100L—Principles of Botany Laboratory **1 unit**

Prerequisites: BOT R100 or concurrent enrollment.
3 hours lab weekly

Laboratory and field studies of the characteristics and relationships of selected plants from the major divisions. Principles of taxonomy. Practice in identification of species by means of keys. Introduction to basic experimental techniques and instrumentation used in the investigation of plant physiology. Field trips will be required.

Transfer credit: UC, CSU

Microbiology Courses

MICR R100—Principles of Microbiology **3 units**

Prerequisites: BIOL R120 or both ANAT R100 and PHSO R100.
3 hours lecture weekly

This course is an introduction to the structure and metabolic activities of bacteria, fungi, algae, protozoa and viruses. The topics will include distribution, molecular genetics and the physical/chemical methods used in microbial control. The principles of disease transmission, prevention and immunity will also be presented. Field trips may be required. (2)

Transfer credit: UC, CSU (CAN: BIOL 14 (MICR R100 + R100L)

MICR R100L—Principles of Microbiology Laboratory **2 units**

Prerequisites: MICR R100 or concurrent enrollment.
6 hours lab weekly

This is a laboratory course designed for biological science majors and students interested in the health science professions. The exercises are intended to give the students experience in the manipulation of microorganisms and exposure to current microbial techniques. Topics covered will include microscopy, prokaryotic cell structure, microbial metabolism, distribution and genetics. (2)

Transfer credit: UC, CSU (CAN: BIOL 14 (MICR R100 + R100L)

Physiology Courses

PHSO R100—Human Physiology **3 units**

Prerequisites: CHEM R110 or college-level equivalent, ANAT R100 and ANAT R100L.
3 hours lecture weekly

Study of the underlying physiological processes involved in the functioning of the organs and systems of the human body.

Transfer credit: UC, CSU (CAN: BIOL 12 (PHSO R100 + R100L)

PHSO R100L—Human Physiology Laboratory **2 units**

Prerequisites: CHEM R110 or equivalent; ANAT R100 and ANAT R100L.
Corequisites: PHSO R100 or successful completion of PHSO R100.
6 hours lab weekly

Laboratory experiments and demonstrations to illustrate basic physiological principles and techniques.

Transfer credit: UC, CSU (CAN: BIOL 12 (PHSO R100 + R100L)

NOTE: The course listed below has been temporarily suspended. For further information, please contact the Math, Science, Health & Athletics division office.

Biol 109 Plant and Animal Communities of California