BIOLOGICAL SCIENCES (BIO)

BIO-099
Preparation for Allied Health Classes **0 UNITS**
1.0 hours lecture
The class is meant for students entering Allied Health classes (BIO 140, 141, 141L, 144, 145, and/or BIO 152) who desire to improve their study techniques for rigorous Allied Health Classes and to review key concepts from biology prerequisites. (BIO 120 and/or high school biology). The class will cover techniques for success in Allied Health exams, time management for rigorous 4-5 unit biology courses, reading skills for biology books, review of BIO 120/previous biology class material, usage of the microscope, and medical terminology as applied to biology classes. This course is offered on a pass/no pass basis only.

BIO-105
Marine Biology **4 UNITS**
Recommended Preparation: A "C" grade or higher or "Pass" in English 120 or ESL 122 or equivalent.
3.0 hours lecture, 3.0 hours laboratory
Introductory college-level course that uses marine plants, animals and their interrelations with their aquatic environment in order to develop an understanding of modern biological principles and processes that are basic to all forms of life. Information dealing with several aspects of taxonomy, evolution, ecology, behavior and physiology of marine organisms is included.(CSU/UC) (AA/AS-B1,CSU-B2,B3, IGETC-5B,5C)

BIO-110
Environmental Biology **4 UNITS**
Recommended Preparation: A "C" grade or higher or "Pass" in English 120 or ESL 122 or equivalent.
3.0 hours lecture, 3.0 hours laboratory
A basic college-level ecology course designed to acquaint the student with living systems, their environment and evolution. Local plants and animals and their habitats will be used to investigate fundamental ecological principles. Almost half of the laboratory periods will be devoted to field studies. Due to the time involved, some of these field studies will take place on Saturdays or Sundays. (CSU/UC) (AA/AS-B1, CSU-B2,B3, IGETC-5B,5C)

BIO-112
Contemporary Issues in Environmental Resources **3 UNITS**
3.0 hours lecture
Through the study of basic ecological concepts, students apply their knowledge to contemporary problems dealing with renewable and nonrenewable resources. Environmental resource problems, such as climate change, water shortage and pollution, energy shortages, air pollution, increasing human populations and wildlife conservation are integrated with political, economic and social implications. The student will consider alternate life styles as possible solutions to existing environmental problems, as well as other means of solving or dealing with these situations. (CSU/UC) (AA/AS-B1,CSU-B2, IGETC-5B)

BIO-113
Introduction to the Biotechnology Lab **2 UNITS**
2.0 hours lecture, 1.0 hours laboratory
This course examines biology laboratory technology as it relates to the field of biotechnology. The class addresses skills and techniques common to the biotechnology industry including measuring activity and quantity of proteins, growth and manipulation of bacteria, genetic engineering, polymerase chain reaction and antibody methods. In addition to hands-on skills, the course will provide context for how and why these techniques are used in the industry. The course also includes activities in team-building and proper lab behaviors. This course enhances the laboratory skills of students wishing to be employed by the biotechnology industry. (CSU)

BIO-114
Heredity, Evolution and Society **3 UNITS**
3.0 hours lecture
This course presents the basic principles of heredity and evolution. Following an introduction to scientific methods and characteristics of living systems, the student learns about the process of evolution and the mechanisms of heredity. These genetic studies will equip the student to better understand a number of current issues concerning medical genetics, genetic counseling, biotechnology, the cancer problem and human diversity. (CSU/UC) (AA/AS-B1, CSU-B2, IGETC-5B)

BIO-118
Introduction to Human Biology **3 UNITS**
3.0 hours lecture
An introduction to biological principles with a human perspective. Such basic areas as the chemistry of biological systems, cell structure and function, the structure, function, and adaptation of organisms, and cellular genetics will be covered by utilizing the human species to develop an understanding of these processes. Related topics such as Mendelian and population genetics, human evolution, ecosystem structure and environmental problems related to human populations will be introduced. (CSU/UC) (AA/AS-B1,CSU-B2, IGETC-5B)

BIO-120
Principles of Biology **4 UNITS**
Recommended Preparation: A "C" grade or higher or "Pass" in ENGL 120 or ESL 122 or equivalent.
3.0 hours lecture, 3.0 hours laboratory
This course uses Evolutionary Theory to discuss and explain the major principles in Biology. These areas include natural selection, general and biochemistry, cell biology, homeostasis & metabolism, classical and molecular genetics, systematics, animal and plant structure and function, and ecology. The laboratory component extends and complements that lecture with hands-on experiences that include experimental design, light microscopy, cellular biology, enzymes, data analysis and interpretation, organismal biology, genetics, systematics, and ecology. (CSU/UC) (AA/AS-B1,CSU-B2,B3, IGETC-5B,5C)

BIO-140
Human Anatomy **4 UNITS**
Prerequisite: "C" grade or higher or "Pass" in BIO 120 or equivalent. Only Nursing majors may fulfill the BIO 120 prerequisite with one year of high school biology with a lab. All BIO 120 courses, course equivalents and high school biology with lab must be completed within the last 7 years of enrollment in BIO 140.
Recommended Preparation: "C" grade or higher or "Pass" in English 120
2.0 hours lecture, 6.0 hours laboratory
A study of the structure of the systems of the human body with emphasis divided between gross anatomy and the cellular detail (histology) of tissues and their evolutionary developments and relationships with other organisms. Cats or other suitable and available specimens are used as dissection specimens in the laboratory along with selected human organs and tissue slides, including cadaver and computer demonstrations. The course meets the anatomy requirement for baccalaureate degrees in nursing, a variety of paramedical fields, including physical and occupational therapy, and exercise science majors. (C-ID BIOL 110B) (CSU/UC) (AA/AS-B1, CSU-B2,B3, IGETC-5B,5C)

BIO-141
Human Physiology **3 UNITS**
Prerequisite: "C" grade or higher or "Pass" in BIO 120 or equivalent. Only Nursing majors may fulfill the BIO 120 prerequisite with one year of high school biology with a lab.
Recommended Preparation: "C" grade or higher or "Pass" in Biology 140 and English 120 or equivalent.
3.0 hours lecture
A study of the function and interrelationships of the nervous, endocrine, muscular, circulatory, respiratory, digestive, exocrine and reproductive systems of the humans body. The course emphasizes the homeostatic and evolutionary nature of these systems with some reference to human disease state. (C-ID BIOL 120B with BIO 141L) (CSU/UC) (AA/AS-B1, CSU-B2, IGETC-5B)

BIO-141L
Laboratory in Human Physiology **1 UNITS**
Prerequisite: "C" grade or higher or "Pass" in BIO 120 or equivalent and BIO 141 or concurrent enrollment in BIO 141 or equivalent.
Recommended Preparation: "C" grade or higher or "Pass" in ENGL 120 or ESL 122 or equivalent.
3.0 hours laboratory
A laboratory experience utilizing a lecture and laboratory instruction format, designed to reinforce and expand the student's understanding of basic physiological principles studied in Biology 141. Emphasis is on lab-based investigations of human physiological processes. (C-ID BIOL 120B with BIO 141) (CSU/UC) (AA/AS-B1, CSU-B3, IGETC-5C)

BIO-144
Anatomy and Physiology I **4 UNITS**
Prerequisite: "C" grade or higher or "Pass" in BIO 120 or equivalent. Only Nursing majors may fulfill the BIO 120 prerequisite with one year of high school biology with a lab.
3.0 hours lecture, 3.0 hours laboratory
The study of physiological chemistry, cell physiology, tissues and the structure and functions of following human systems: bone, muscle, endocrine and nervous systems. The gross anatomy, micro-anatomy as well as functions and interrelationships of these systems are studied. The course emphasizes the homeostatic nature of these systems with some reference to human disease states. Cat or other suitable, available specimens are used as dissected specimens in lab along with selected human organs, tissue slides, cadaver and computer demonstrations. This course, along with Biology 145, meets the anatomy and physiology requirements for associate degrees and baccalaureate degrees in nursing as well as degrees in a variety of related paramedical fields. (CSU/UC) (AA/AS-B1,CSU-B2,B3, IGETC-5B,5C)

BIO-145
Anatomy and Physiology II **4 UNITS**
Prerequisite: "C" grade or higher or "Pass" in BIO 144 or equivalent.
3.0 hours lecture, 3.0 hours laboratory
This course is a continuation of Biology 144, Anatomy and Physiology I. It is a study of structures and functions of the following systems: circulatory, respiratory, digestive, excretory, immune, lymphatic, and reproductive systems. The gross anatomy, micro-anatomy as well as functions and interrelationships of these systems are studied. The course emphasizes the homeostatic nature of these systems with reference to human disease states. Cat or other suitable, available specimens are used as dissected specimens in lab along with selected human organs and tissue slides and computer demonstrations. This course, along with Biology 144, meets the anatomy and physiology requirements for associate degree, and baccalaureate degrees in nursing as well as degrees in a variety of other related paramedical fields. (CSU/UC) (AA/AS-B1,CSU-B2,B3, IGETC-5B,5C)

BIO-150
Field Study of the Natural History of the Greater San Diego Region **3 UNITS**
Prerequisite: "C" grade or higher or "Pass" in BIO 110 or 120; or GEOG 120 or 121 or 140; or GEOL 110 or 111; or OCEA 112 or equivalent.
2.0 hours lecture, 3.0 hours laboratory
An exciting, team-taught, interdisciplinary, field-based study of the natural environment of the San Diego region, including related parts of Imperial, Riverside, and Orange Counties. Vans are utilized to visit sites that best illustrate (1) the region's physical environment (including tectonics, geologic history, geomorphology, hydrology, meteorology, climatology, and soils), (2) the evolutionary response to environmental variation (focusing on coastal sage scrub, chaparral, and desert ecosystems), and (3) the interaction of humans with the natural environment. Emphasis on field measurement includes use of GPS, compass, clinometer, maps, the current Jepson plant taxonomy, etc. Four weekends in spring semester only. Overnight campouts required. Students with credit in Biology 150 will not be able to enroll in Geography 150, Geology 150 or Oceanography 150. (CSU/UC)

BIO-152
Paramedical Microbiology **5 UNITS**
Prerequisite: "C" grade or higher or "Pass" in BIO 120 or equivalent. Only Nursing majors may fulfill the BIO 120 prerequisite with one year of high school biology with a lab.
Recommended Preparation: "C" grade or higher or "Pass" in CHEM 115 or equivalent.
3.0 hours lecture, 6.0 hours laboratory
An introduction to the major groups of micro-organisms and the diseases they cause. Emphasis in the lecture and laboratory is on concepts and techniques relevant to students entering paramedical professions: identifying and handling bacteria, basic principles of immunology, medical microbiology and epidemiology. Principles of microbial physiology, genetics, growth and control are also discussed. Biology 152 will also satisfy the introductory microbiology requirement needed by students who major in nursing and other paramedical fields, leading to a B.S. or B.A. degree. (CSU/UC) (AA/AS-B1, CSU-B2,B3, IGETC-5B,5C)

BIO-215
Statistics for Life Sciences **3 UNITS**
Prerequisite: Appropriate placement or intermediate algebra. A "C" grade or higher or Pass in Biology 120 or 230 or 240 or equivalent.
2.0 hours lecture, 3.0 hours laboratory
Methods and experience in defining and solving quantitative problems in the life sciences. Emphasis is on the design of experiments and the application of a variety of parametric and nonparametric statistical techniques to the analysis of data. (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

BIO-230
Principles of Cellular, Molecular and Evolutionary Biology **4 UNITS**
Prerequisite: "C" grade or higher or "Pass" in CHEM 141 or equivalent.
Recommended Preparation: "C" grade or higher or "Pass" in Biology 120 and English 120 or equivalents.
3.0 hours lecture, 3.0 hours laboratory
This course surveys the general principles of biology at an advanced level. Emphasis is placed on the following topics: prokaryotic and eukaryotic, cellular processes including energy metabolism, membrane transport and cell cycle/cell division and molecular genetics along with recombinant DNA; Mendelian and Non-Mendelian genetics; communication between cells; and the current models for cellular evolution. The course also includes laboratory exercises emphasizing the topics listed and the application of those topics to biotechnology. This course along with Biology 240 is the recommended Biology sequence for life science majors. It is suggested that students contact the anticipated transfer institution to ascertain specific transfer requirements for their major. (C-ID BIOL 190) (CSU/UC) (AA/AS-B1, CSU-B2,B3, IGETC-5B,5C)

BIO-240
Principles of Ecology, Evolution and Organismal Biology **5 UNITS**
Prerequisite: Appropriate Placement or intermediate algebra
Recommended Preparation: "C" grade or higher or "Pass" in BIO 120 and ENGL 120 or equivalent.
4.0 hours lecture, 3.0 hours laboratory
This course along with Biology 230 is the recommended biology sequence for life science majors. It surveys the general principles of biology at an advanced level. Emphasis is placed on the following topics: the history of life on Earth and modern biodiversity; structures for reproduction, nutrition, respiration, transport, regulation of the internal environment, and response to the environment, the diversity of structures that perform these processes, how these structures allow adaptation to different environments and trophic roles; fundamental ecological principles, including population growth and regulation, nutrient cycling, succession and interspecific interactions; human impacts on the environment; and the theory of evolution, including population genetics, the mechanisms of evolution, and the evolutionary basis of species classification. The course includes a laboratory component emphasizing the systematics and diversity of prokaryotes and eukaryotes, including fungi, plants and animals, as well as activities investigating ecological and evolutionary processes using the scientific method. It is suggested that students contact the anticipated transfer institution to ascertain specific transfer requirements for their major. (C-ID BIOL 140)(CSU/UC) (AA/AS-B1, CSU-B2,B3, IGETC-5B,5C)

BIO-251
Human Dissection **1 UNITS**
Prerequisite: "C" grade or higher or "Pass" in Biology 140 or equivalent and recommendation from the students' Biology 140, Human Anatomy, instructor.
3.0 hours laboratory
This course provides the supervised study of human anatomy through dissection of a human cadaver. It is a course intended to enhance knowledge gained from a college-level Human Anatomy course by observing and relating those organ systems learned to an actual human cadaver. Students will begin by identifying surface landmarks and relate them to successively deeper structures. Students will develop and refine dissecting skills use on human cadavers. Instruction of human anatomy at this level is intended to assist students pursuing careers in nursing and other allied health professions. This class has limited enrollment. Preregistration counseling with instructor is required. (CSU/UC)