**BIOLOGY**

**NOTE TO LIFE SCIENCE MAJORS:** Students planning to major in Biology, Biotechnology, Botany, Zoology, Ecology, Microbiology, Anatomy, Physiology, Forestry, Wildlife Management, Natural Resources, Medicine, Dentistry, Veterinary Medicine, Optometry, and Pharmacy should complete BIOL 215 and 230 (taken in sequence) and CHEM 210, 220, 234, 235, 237, 238; PHYS 210, 220, and the appropriate mathematics prerequisites.

**BIOL 101 OUR BIOLOGICAL WORLD**

Study of biology as it relates to humans and their environment with special emphasis on ecological interrelationships, evolution and genetics, and topics of current importance. Recommended for non-science majors to fulfill laboratory science transfer requirement. *Letter Grade Only. Degree Credit.*

**Units:** 4

**Hours/semester:** 48-54 Lecture; 48-54 Lab

**Recommended:** Eligibility for ENGL 846 or ESOL 400, or equivalent.

**Transfer Credit:** CSU (CSU GE Area B2, B3), UC (IGETC Area 5B)

**BIOL 110 PRINCIPLES OF BIOLOGY**

Using natural selection and physiological survival as a unifying theme, this course deals with the basic problems common to all living systems, and compares the functional solution that various organisms have evolved, illuminating the unity in diversity that characterizes life on earth. Recommended for non-science majors to fulfill laboratory science transfer requirement. *Letter Grade Only. Degree Credit.*

**Units:** 4

**Hours/semester:** 48-54 Lecture; 48-54 Lab; 96-108 Homework

**Recommended:** Eligibility for ENGL 846 or ESOL 400, or equivalent.

**Transfer Credit:** CSU (CSU GE Area B2, B3), UC (IGETC Area 5B)

**BIOL 111 NATURAL HISTORY OF CALIFORNIA**

Introduction to common animals and plants of the San Francisco Bay Region, their natural history and distributions. *Letter Grade Only. Degree Credit.*

**Units:** 4

**BIOL 130 HUMAN BIOLOGY**

Designed to provide students with an appreciation of the structure, function, and development of their own bodies. Topics include an introduction to science and scientific methods of investigation and some elementary chemistry (no previous background necessary) as a basis for understanding human functions such as digestion, circulation, reproduction, heredity, evolution, human ecological roles and other systems. Some diseases and other causes of body malfunction are discussed. *Letter Grade Only. Degree Credit.*

**Units:** 3

**Hours/semester:** 48-54 Lecture; 96-108 Homework

**Recommended:** Eligibility for ENGL 846 or ESOL 400, or equivalent.

**AA/AS Degree Requirements:** Area 9B2

**Transfer Credit:** CSU (CSU GE Area B2), UC (IGETC Area 5B)

**BIOL 140 ANIMALS, PEOPLE, AND ENVIRONMENT**

This course will familiarize the student with the methods and importance of behavioral investigation in animals. Emphasis on past and current human-animal relationships, the impact on animal populations and increasing need for wildlife protection. *Letter Grade Only. Degree Credit.*

**Units:** 3

**Hours/semester:** 48-54 Lecture; 96-108 Homework

**Recommended:** Eligibility for ENGL 846 or ESOL 400, or equivalent.

**Transfer Credit:** CSU (CSU GE Area B2), UC (IGETC Area 5B)

**BIOL 145 PLANTS, PEOPLE & ENVIRONMENT**

A survey of plants emphasizing those aspects of plant biology that have affected the lives of people. Topics include: the success and failure of modern agriculture; the impact of humans on the environment; and the importance of plants in solving critical problems of hunger and conservation of energy. Attention is given to modes of inquiry or ways in which scientists carry out their investigations. *Letter Grade Only. Degree Credit.*

**Units:** 3
BIOL 150 INTRODUCTION TO MARINE BIOLOGY
A non-technical introduction to the scientific method used in studies of marine biology. Major emphasis is given to the natural history of marine animals and plants and their relationship with the oceanic environment. Letter Grade Only. Degree Credit.
Units: 3
Hours/semester: 48-54 Lecture; 96-108 Homework
Recommended: Eligibility for ENGL 846 or ESOL 400, or equivalent.
Transfer Credit: CSU (CSU GE Area B2), UC (IGETC Area 5B)

BIOL 170 PRINCIPLES OF APPLIED BIOSCIENCE
A survey of the principles that govern the living world, from molecules to cells and tissues, to organs and whole organisms, to populations and ecosystems, to the entire biosphere. Special emphasis is placed upon experimental approaches, current issues, and practical application of the scientific method and biological principles to issues affecting public health, agriculture, and socioeconomic change. Current news and developments in relevant areas of biological sciences and biotechnology will be reviewed and discussed. Letter Grade Only. Degree Credit.
Units: 3
Hours/semester: 48-54 Lecture; 96-108 Homework
Recommended: Eligibility for ENGL 846 or ESOL 400, or equivalent.
Transfer Credit: CSU (CSU GE Area B2), UC (IGETC Area 5B)

BIOL 171 LABORATORY PRINCIPLES OF APPLIED BIOSCIENCE
The laboratory introduces students to practical methods in preparing materials, reagents and media for conducting biological investigations and products of genetic engineering. Students will learn to measure and prepare solutions of various concentrations and pH, how to use basic chemistry and biological instrumentation such as digital scales, pipettes and micropipettes, centrifuges, and vertical and horizontal electrophoresis apparatuses. Students will plan and conduct biological experiments using the scientific method and employing modern laboratory methods and instrumentation. Data will be analyzed using spreadsheet software for tabulation and graphing. Teamwork, responsible lab technique, and proper and thorough notebook keeping will be emphasized. Letter Grade Only. Degree Credit.
Units: 1
Hours/semester: 48-54 Lab
Prerequisites: Completion of, or concurrent enrollment in,, BIOL 170 or equivalent.
Transfer Credit: CSU (CSU GE Area B3), UC (IGETC Area 5B)

BIOL 215 ORGANISIMAL BIOLOGY: CORE I
As part of a two-course core program, BIOL 215 is an introductory survey of organismal form and function. Analysis of fundamental biological functions including nutrition, gas exchange, reproduction, natural selection, and ecology using representative living organisms. Letter Grade Only. Degree Credit.
Units: 5
Hours/semester: 48-54 Lecture; 96-108 Lab; 16-18 TBA; 80-90 Homework
Prerequisites: MATH 120 or MATH 123 or appropriate math placement test score and other measures as appropriate, or equivalent.
Recommended: Eligibility for ENGL 846 or ESOL 400, or equivalent.
Transfer Credit: CSU (CSU GE Area B2, B3), UC (IGETC Area 5B)
C-ID: BIOL 135S, BIOL 140

BIOL 230 INTRODUCTION TO CELL BIOLOGY: CORE II
An introduction to life functions as seen at the cellular level; cellular structure, macromolecular architecture and function, cellular energetics, chemical regulation, photochemical activities, molecular genetics, and genetic engineering. It is the second course in the two-course Biology core sequence. Letter Grade Only. Degree Credit.
Units: 5
Hours/semester: 48-54 Lecture; 96-108 Lab; 16-18 TBA; 80-90 Homework
Prerequisites: BIOL 215 and CHEM 210 or equivalent
AA/AS Degree Requirements: Area 9B2
Transfer Credit: CSU (CSU GE Area B2, B3), UC (IGETC Area 5B)
C-ID: BIOL 135S; BIOL 190

BIOL 240 GENERAL MICROBIOLOGY
Morphology, taxonomy, ecology, and physiology of microorganisms, with emphasis on bacteria. Laboratory
BIOLOGY techniques on culture and identification of bacteria. Recommended for agriculture, biochemistry, nursing, pre-medical and pre-dental, biotechnology engineering, and other life science majors. Letter Grade Only. Degree Credit.

Units: 4
Hours/semester: 48-54 Lecture; 48-54 Lab; 16-18 TBA; 80-90 Homework
Prerequisites: Successful completion of a college-level laboratory science course.
Transfer Credit: CSU (CSU GE Area B2, B3), UC (IGETC Area 5B, 5C)

BIOL 250 HUMAN ANATOMY

Students learn the gross and microscopic structure of the human body through lecture and laboratory study of dissections, histology slides, anatomy models, and prosected human cadavers. This course is primarily intended for Nursing, Allied Health, Kinesiology, and other health related majors. This course is an elective for pre-dental, premedical, and pre-veterinary students. Recommended for general life science majors, respiratory therapy majors, and physical education majors. Letter Grade Only. Degree Credit.

Units: 4
Hours/semester: 48-54 Lecture; 48-54 Lab; 16-18 TBA; 80-90 Homework
Prerequisites: BIOL 101 or BIOL 110 or BIOL 130 or equivalent.
Transfer Credit: CSU (CSU GE Area B2, B3), UC (IGETC Area 5B)
C-ID: BIOL 110B

BIOL 260 HUMAN PHYSIOLOGY

Students learn through lecture and laboratory experiences how the organ systems function in maintaining homeostasis - regulating change and growth processes in humans. This course is primarily intended for Nursing, Allied Health, Kinesiology, and other health related majors. This course is an elective for pre-dental and pre-medical students. Letter Grade Only. Degree Credit.

Units: 5
Hours/semester: 48-54 Lecture; 96-108 Lab; 96-108 Homework
Prerequisites: BIOL 250 or equivalent; and CHEM 192 or CHEM 210 or CHEM 410 or equivalent.
AA/AS Degree Requirements: Area 9B2
Transfer Credit: CSU (CSU GE Area B2, B3), UC (IGETC Area 5B, 5C)

BIOL 426 GENETIC ENGINEERING

This course will examine how genes work and how they can be manipulated and cloned. Topics include DNA and protein synthesis, genetic engineering, and DNA fingerprinting. Also includes laboratory experience with DNA analyses: RFLP and PCR. Grade Option (Letter Grade or Pass/No Pass). Degree Credit.

Units: 1
Hours/semester: 16-18 Lecture; 32-36 Homework
Recommended: Eligibility for ENGL 846 or ESOL 400, or equivalent.
Transfer Credit: CSU

BIOL 430 INTRODUCTION TO IMMUNOLOGY

This course will examine the immune system and how it protects us from disease. Topics include vaccine and antiserum production by traditional methods and by genetic engineering. Also includes laboratory experience with laboratory techniques. Grade Option (Letter Grade or Pass/No Pass). Degree Credit.

Units: 1
Hours/semester: 16-18 Lecture; 32-36 Homework
Recommended: Eligibility for ENGL 846 or ESOL 400, or equivalent.
Transfer Credit: CSU

BIOL 432 FERMENTATION TECHNOLOGY

Overview of the origin and development of industrial fermentations. Course will cover fermentations used in the production of beverages, food ingredients, enzymes, chemicals and pharmaceuticals to demonstrate microbial metabolism. Grade Option (Letter Grade or Pass/No Pass). Degree Credit.

Units: 1
Hours/semester: 16-18 Lecture; 32-36 Homework
Recommended: Eligibility for ENGL 836
Transfer Credit: CSU

BIOL 665 SELECTED TOPICS IN BIOLOGY

This course is designed to develop specific skills, techniques or concepts that are appropriate to biology and/or biotechnology. The course will focus on one specific topic; for example, new or leading edge developments in biotechnology. Grade Option (Letter Grade or Pass/No Pass).

Units: 0.5 - 2
BIOL 675 HONORS COLLOQUIUM IN BIOLOGY

One lecture hour per week or 3 lab hours per week. Corequisite: Concurrent enrollment in any non-honors biology level 100 or 200 course. Readings, discussion and lectures covering selected advanced topics in biology to be determined by the Biology Department and the Honors Program. May be repeated three times for credit. Letter Grade Only. Degree Credit.

Units: 1

BIOL 695 INDEPENDENT STUDY IN BIOLOGY

Designed for students who are interested in furthering their knowledge via self-paced, individualized instruction provided in selected areas or directed study to be arranged with instructor and approved by the division dean using the Independent Study Form. Varying modes of instruction can be used -- laboratory, research, skill development, etc. For each unit earned, students are required to devote three hours per week throughout the semester. Students may take only one Independent Study course within a given discipline. Grade Option (Letter Grade or Pass/No Pass). Degree Credit.

Units: 0.5 - 3

Recommended: Eligibility for ENGL 846 or ESOL 400, or equivalent.

Transfer Credit: CSU