

# BIOLOGY (BIOL)

## **BIOL 1A • PRINCIPLES OF CELL BIOLOGY**

<b>Units:</b>	6
<b>Hours:</b>	4 lecture, 6 laboratory per week (120 total per quarter)
<b>Prerequisite:</b>	CHEM 1A.
<b>Advisory:</b>	Students taking the biology majors' sequence (BIOL 1A, 1B, 1C, 1D) are strongly advised to take the sequence in its entirety.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

An introduction to biological molecules, cellular structure and function, bioenergetics, the genetics of both prokaryotic and eukaryotic organisms, cell communication and signaling, the cell cycle, and elements of molecular biology. Intended for biology majors.

## **BIOL 1B • FORM & FUNCTION IN PLANTS & ANIMALS**

<b>Units:</b>	6
<b>Hours:</b>	4 lecture, 6 laboratory per week (120 total per quarter)
<b>Prerequisite:</b>	BIOL 1A.
<b>Advisory:</b>	Students taking the biology majors' sequence (BIOL 1A, 1B, 1C, 1D) are strongly advised to take the sequence in its entirety.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

An introduction to the structure and physiological processes of plants and animals. Transport systems, reproduction, digestion, gas exchange, regulation of the internal environment, responses to external stimuli, nervous systems, hormones, and locomotion. Intended for biology majors.

## **BIOL 1C • EVOLUTION, SYSTEMATICS & ECOLOGY**

<b>Units:</b>	6
<b>Hours:</b>	4 lecture, 6 laboratory per week (120 total per quarter)
<b>Prerequisite:</b>	BIOL 1B.
<b>Advisory:</b>	Students taking the biology majors' sequence (BIOL 1A, 1B, 1C, 1D) are strongly advised to take the sequence in its entirety.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Principles of evolutionary theory, classification of organisms, and basic ecology. Phylogenetic survey of the major groups of organisms (bacteria, archaea, protists, plants, animals and fungi) and their evolutionary history. Intended for biology majors.

## **BIOL 1D • INTRODUCTION TO MOLECULAR GENETICS**

<b>Units:</b>	4
<b>Hours:</b>	4 lecture per week (48 total per quarter)
<b>Prerequisite:</b>	BIOL 1A.
<b>Advisory:</b>	Students taking the biology majors' sequence (BIOL 1A, 1B, 1C, 1D) are strongly advised to take the sequence in order and in its entirety.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Intended for students wishing to transfer to a four year school with a major in molecular biology, biochemistry, or molecular genetics. An introduction to molecular genetics with an emphasis in genome organization, DNA replication and repair, mutation, transcription, translation, and the regulation of gene expression.

**BIOL 8 • BASIC NUTRITION**

<b>Units:</b>	5
<b>Hours:</b>	5 lecture per week (60 total per quarter)
<b>Advisory:</b>	Demonstrated proficiency in English by placement via multiple measures OR through an equivalent placement process OR completion of ESLL 125 & ESLL 249.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area VII: Lifelong Learning
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Introductory nutrition course intended for non-science/health-career majors. Not intended for students wishing to pursue a career in health care. Basic biological function of nutrients. Nutritional needs throughout the life span. Relationship between nutrition and disease. Current scientific, social, and psychological issues and controversies in nutrition.

**BIOL 9 • ENVIRONMENTAL BIOLOGY**

<b>Units:</b>	4
<b>Hours:</b>	4 lecture per week (48 total per quarter)
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area VII: Lifelong Learning, Area III: Natural Sciences
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

An introduction to environmental biology and a survey of the biological and ecological principles needed to understand environmental issues. Global, national, and local perspectives on current issues, such as resource use, pollution, biodiversity, and impacts of human population growth.

**BIOL 9L • ENVIRONMENTAL BIOLOGY LABORATORY**

<b>Units:</b>	1
<b>Hours:</b>	3 laboratory per week (36 total per quarter) In-class field trips.
<b>Corequisite:</b>	BIOL 9.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area III: Natural Sciences
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

An introduction to environmental biology through laboratory and field experiments, examination of local examples illustrating ecological concepts, use of sampling techniques to assess environmental quality, and student research of environmental topics.

**BIOL 10 • GENERAL BIOLOGY: BASIC PRINCIPLES**

<b>Units:</b>	5
<b>Hours:</b>	4 lecture, 3 laboratory per week (84 total per quarter)
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area III: Natural Sciences
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Methods of science and basic principles of biology. Special emphasis on genetics, ecology, overpopulation, nutrition and disease prevention.

**BIOL 12 • HUMAN GENETICS**

<b>Units:</b>	4
<b>Hours:</b>	4 lecture per week (48 total per quarter)
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area VII: Lifelong Learning
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

An introduction to the nature of human inheritance. The molecular basis of inheritance, Mendelian genetics, population genetics, common human genetic diseases, factors affecting human diversity, and the social and moral implications of recent advances in genetics. Intended for both majors and GE students.

**BIOL 13 • MARINE BIOLOGY**

<b>Units:</b>	5
<b>Hours:</b>	4 lecture, 3 laboratory per week (84 total per quarter) Three all-day field trips.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area III: Natural Sciences
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

An introduction to biology using marine animals, plants and ecosystems. Major emphasis given to the ecology and conservation issues with examples drawn from California marine life. Conceptual development of seashore, estuaries, coral reefs, kelp forests, and pelagic life as interrelated ecosystems.

## **BIOL 14 • HUMAN BIOLOGY**

<b>Units:</b>	5
<b>Hours:</b>	4 lecture, 3 laboratory per week (84 total per quarter)
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area III: Natural Sciences
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

An introduction to biology using human beings as the exemplary organism. The evolution and biological unity of the human species and of all life forms; American and global patterns of human biological diversity; reproduction and heredity; how human organ systems function; humans and their environment; the uses and misuses of the scientific method; the scientific and biological bases for human equality.

## **BIOL 15 • CALIFORNIA ECOLOGY/ NATURAL HISTORY**

<b>Units:</b>	5
<b>Hours:</b>	4 lecture, 3 laboratory per week (84 total per quarter) All-day field trips.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area III: Natural Sciences
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

An introduction to ecology, natural history and field biology through the study, largely in an outdoor setting, of the plants and animals of the San Francisco Bay Area.

## **BIOL 28 • INTRODUCTION TO BIOENGINEERING**

<b>Units:</b>	4
<b>Hours:</b>	4 lecture per week (48 total per quarter)
<b>Advisory:</b>	Not open to students with credit in ENGR 28.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable
<b>Cross-Listed:</b>	ENGR 28

Introduction to the field of bioengineering. Topics covered will include an overview of basic biological systems and biochemistry for non-biology majors, how the basic principles of engineering and physics can be applied to problems in biological science, and an overview of current trends in bioengineering, including: medical devices, biomaterials, bioinstrumentation, computational biology, and agricultural biotechnology.

## **BIOL 40A • HUMAN ANATOMY & PHYSIOLOGY I**

<b>Units:</b>	5
<b>Hours:</b>	4 lecture, 3 laboratory per week (84 total per quarter)
<b>Advisory:</b>	BIOL 14 or equivalent; one of the following: ENGL 1A or 1AH or ESLL 26 or equivalent; one of the following: CHEM 1A, 25, 30A or equivalent.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Human anatomy and physiology with an emphasis on integration of systems and homeostatic mechanisms. Physical and chemical basis of life, histology and integumentary, skeletal and muscular systems. This course is primarily intended for nursing, allied health, kinesiology, and other health-related majors.

## **BIOL 40B • HUMAN ANATOMY & PHYSIOLOGY II**

<b>Units:</b>	5
<b>Hours:</b>	4 lecture, 3 laboratory per week (84 total per quarter)
<b>Prerequisite:</b>	BIOL 40A or equivalent.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Human anatomy and physiology with an emphasis on integration of systems and homeostatic mechanisms for the nervous, cardiovascular, and respiratory systems. This course is primarily intended for nursing, allied health, kinesiology, and other health-related majors.

## **BIOL 40C • HUMAN ANATOMY & PHYSIOLOGY III**

<b>Units:</b>	5
<b>Hours:</b>	4 lecture, 3 laboratory per week (84 total per quarter)
<b>Prerequisite:</b>	BIOL 40A or equivalent.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Human anatomy and physiology with an emphasis on integration of systems and homeostatic mechanisms for the digestive system, metabolism, urinary system, fluid, electrolyte and acid/base balance, lymphatic system, endocrine system, and reproductive system. This course is primarily intended for nursing, allied health, kinesiology, and other health-related majors.

**BIOL 41 • MICROBIOLOGY**

<b>Units:</b>	6
<b>Hours:</b>	4 lecture, 6 laboratory per week (120 total per quarter)
<b>Prerequisite:</b>	CHEM 1A or CHEM 25 or CHEM 30A or equivalent.
<b>Advisory:</b>	Demonstrated proficiency in English by placement via multiple measures OR through an equivalent placement process OR completion of ESLL 125 & ESLL 249.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area III: Natural Sciences
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Morphology and physiology of microorganisms with emphasis on the important roles that microbes play in human life. Mechanisms of pathogenicity, host-parasite relationships, the immune response and principles of disease transmission. Techniques of microbial control including sterilization, aseptic procedures, use of disinfectants, antiseptics and chemotherapy. Basic laboratory skills of microbiology.

**BIOL 45 • INTRODUCTION TO HUMAN NUTRITION**

<b>Units:</b>	4
<b>Hours:</b>	4 lecture per week (48 total per quarter)
<b>Prerequisite:</b>	BIOL 1A or 40A.
<b>Advisory:</b>	One of the following: ENGL 1A or 1AH or ESLL 26.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Introduction to the medical aspects of nutrition, intended for students wishing to pursue a career in health care. Biological function and chemical classification of nutrients. Nutritional needs throughout the lifespan. Effects of nutritional deficiencies and excesses. Recommended nutrient intakes and the role of diet in the development of chronic disease.

**BIOL 54H • HONORS INSTITUTE SEMINAR IN BIOLOGY**

<b>Units:</b>	1
<b>Hours:</b>	1 lecture per week (12 total per quarter)
<b>Advisory:</b>	Not open to students with credit in BIOL 34 or 34H.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

A seminar in directed readings, discussions and projects in biology. Specific topic to be determined by the instructor. This advanced honors course is open to all majors.

**BIOL 70R • INDEPENDENT STUDY IN BIOLOGY**

<b>Units:</b>	1
<b>Hours:</b>	3 laboratory per week (36 total per quarter)
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Provides an opportunity for the student to expand their studies in Biology beyond the classroom by completing a project or an assignment arranged by agreement between the student and instructor. The student is required to contract with the instructor to determine the scope of assignment and the unit value assigned for successful completion. Students may take a maximum of 6 units of Independent Study per department.

**BIOL 71R • INDEPENDENT STUDY IN BIOLOGY**

<b>Units:</b>	2
<b>Hours:</b>	6 laboratory per week (72 total per quarter)
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Provides an opportunity for the student to expand their studies in Biology beyond the classroom by completing a project or an assignment arranged by agreement between the student and instructor. The student is required to contract with the instructor to determine the scope of assignment and the unit value assigned for successful completion. Students may take a maximum of 6 units of Independent Study per department.

## **BIOL 72R • INDEPENDENT STUDY IN BIOLOGY**

<b>Units:</b>	3
<b>Hours:</b>	9 laboratory per week (108 total per quarter)
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Provides an opportunity for the student to expand their studies in Biology beyond the classroom by completing a project or an assignment arranged by agreement between the student and instructor. The student is required to contract with the instructor to determine the scope of assignment and the unit value assigned for successful completion. Students may take a maximum of 6 units of Independent Study per department.

## **BIOL 73R • INDEPENDENT STUDY IN BIOLOGY**

<b>Units:</b>	4
<b>Hours:</b>	12 laboratory per week (144 total per quarter)
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Provides an opportunity for the student to expand their studies in Biology beyond the classroom by completing a project or an assignment arranged by agreement between the student and instructor. The student is required to contract with the instructor to determine the scope of assignment and the unit value assigned for successful completion. Students may take a maximum of 6 units of Independent Study per department.

## **BIOL 81 • LEARNERS ENGAGED IN ADVOCATING FOR DIVERSITY IN SCIENCE**

<b>Units:</b>	4
<b>Hours:</b>	4 lecture per week (48 total per quarter)
<b>Advisory:</b>	BIOL 1A, 40A, 41, or equivalent; ENGL 1A or 1AH or ESLL 26 or equivalent; not open to students with credit in CHEM 81 or MATH 83.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Area VII: Lifelong Learning
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable
<b>Cross-Listed:</b>	CHEM 81 MATH 83

This course is intended for students interested in equity, diversity, and inclusion in the sciences. Students will explore research on inclusion and diversity in STEM and health science, as well as research on interventions to enhance inclusion and diversity in those fields in higher education contexts. Students will reflect on how their own identities have impacted their experiences in science and develop strategies to promote equity in their future STEM or health science careers. Through service learning, students will co-author culturally relevant curricular materials that will expand faculty capacity to connect students' personal lives to course content. Materials developed by students will be used and assessed in STEM and/or health science courses at Foothill College, local middle schools, and/or local high schools, and will be made available for a nationwide audience of teachers and professors.

## **BIOL 300 • HUMAN PATHOPHYSIOLOGY & PHARMACOLOGY**

<b>Units:</b>	4
<b>Hours:</b>	4 lecture per week (48 total per quarter)
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

The basis of human disease and its management relevant to the practice of health care professionals. The etiology and pathogenesis of diseases are discussed along with the application of diagnostic procedures and patient care. The pathology and underlying principles of the human systems are presented, along with characteristics of typical drugs, side effects, cautions, and interactions. This is an upper division General Education course, intended for students in the Dental Hygiene Baccalaureate Degree Program; enrollment is limited to students accepted in the program.