BIOLOGY (BIO)

BIO 100. Principles of Biology. (4 Credits)
explores the fundamental concepts of biology in the fields of: research science, cytology, genetics, microbiology, human biology, botany, taxonomy, zoology, ecology and evolution through reading, online activities, lecture and laboratory experiences. Laboratory course. 4 credits.
Prerequisite: None
Offered at: CUAA

BIO 141. General Biology I. (4 Credits)
is an introductory laboratory course which contains a heavy emphasis on the cell, its structures, and the processes which take place inside the smallest of living units. Laboratory course. 4 credits.
Prerequisite: None
Offered at: CUAA

BIO 142. General Biology II. (4 Credits)
is a continuation of BIO 141 that focuses on the biological processes that occur at the system level in both plants and animals. Topics such as transportation, organism control, nutrient breakdown and utilization will be compared in different organisms. Laboratory course. 4 credits.
Prerequisite: None
Offered at: CUAA

BIO 146. Essentials Anat & Phys. (4 Credits)
is a laboratory course for non-biology majors. It surveys the major organ systems in the human body from both a structural and functional perspectives. Laboratory course. 4 credits.
Prerequisite: None
Offered at: CUAA

BIO 149. Medical Microbiology. (4 Credits)
introduces students to the role that bacteria, viruses and eukaryotic microbes play in human health and disease. It is designed for students in the nursing program. Laboratory course. 4 credits.
Prerequisite: CHEM 105
Offered at: CUAA, CUW

BIO 151. Functional Human Biology I. (4 Credits)
is an introduction to the cellular processes that occur in the human body with an emphasis on cellular composition/structure, biochemistry and genetics. It is designed for students in the biomedical sciences and pre-professional programs. Laboratory course. 4 credits.
Prerequisite: None
Offered at: CUAA, CUW

BIO 152. Functional Human Biology II. (4 Credits)
is a continuation of BIO 151 with emphasis on the structure and function of selected human organ systems. Laboratory course. 4 credits.
Prerequisite: None
Offered at: CUAA, CUW

BIO 156. Environmental Science. (4 Credits)
is a study of the effects man has on his surroundings through a basic understanding of ecological, biochemical, and physical systems in nature. Cross-listed (Global Environmental Issues) GEOG 356. Laboratory course. 4 credits.
Prerequisite: None
Offered at: CUAA

BIO 191. Human Anat & Phys I. (4 Credits)
begins with a study of the cell and cellular processes and tissues. It continues with investigation of the integumentary, skeletal, muscular, and nervous systems. Students must consult with their academic advisor or the Academic Advising office before enrolling in this course. Laboratory course. 4 credits.
Prerequisite: None
Offered at: CUAA, CUW

BIO 192. Human Anat & Phys II. (4 Credits)
is a continuation of BIO 191 and provides students with an in-depth study of the endocrine, circulatory, respiratory, digestive, excretory, and reproductive systems. Laboratory Course. 4 credits.
Prerequisite: BIO 191.
Offered at: CUAA, CUW

BIO 222. Pathophysiology for Nurses. (3 Credits)
explains various altered health states and their variances from wellness in the human body. course discussion includes essential concepts of disease processes by body system, core body functions, general mechanisms, and systemic manifestations of altered health across the lifespan. this course will enable students to apply this knowledge to clinical practice, and complements other course offerings at this level of study. Concurrent enrollment in BIO 251. 3 credits.
Prerequisites: BIO 149, BIO191/2, CHEM 105.
Offered at: CUAA

BIO 240. Zoology. (4 Credits)
is a survey of the animal kingdom and study of the biology of animals in their natural environment. Recommended: BIO 141 or BIO 151. 4 credits.
Prerequisite: CHEM 105
Offered at: CUAA

BIO 244. Botany. (4 Credits)
is an in-depth study of the plant kingdom with emphasis on the study of plants in their natural habitat. Recommended: BIO 141 or BIO 151. 4 credits.
Prerequisite: None
Offered at: CUAA

BIO 251. Pharmacology for Nurses I. (2 Credits)
is an introductory course and is designed to assist the nursing student to understand the basic concepts of pharmacology, drug therapies for disease states as they relate to retaining, attaining, or maintaining a patient's line of defense. Concurrent enrollment in BIO 222. 2 credits.
Prerequisites: BIO 149, BIO 191/2, CHEM 105, MATH 128 or higher level math.
Offered at: CUAA
BIO 255. Pharmacology for Nurses II. (2 Credits)
continues to build on BIO 251. The course is designed to assist the nursing student to understand the basic concepts of pharmacology, drug therapies for disease states as they relate to retaining, attaining or maintaining a client's line of defense. 2 credits.
Prerequisites: NURS 203, BIO 222, BIO 251.
Offered at: CUAA, CUW

BIO 260. Microbiology. (4 Credits)
is a laboratory course that focuses on the biology and genetics of organisms too small to be seen by the human eye. Students will be introduced to the roles that bacteria, viruses, and eukaryotic microbes play in the environment and human disease. Laboratory course. 4 credits.
Prerequisites: One year of general biology (BIO 141/2 or BIO 151/2 or BIO151/BIO240) and one semester of chemistry (CHEM 100, CHEM 105, or CHEM 141).
Offered at: CUW

BIO 285. Pathophysiology. (3 Credits)
introduces the student to the study of the etiology, pathogenesis and clinical manifestations of common disease processes. Basic principles into the mechanism of cellular and tissue injury are introduced, followed by presentations of common diseases in the various organ systems. 3 credits.
Prerequisites: Two semesters of biology (BIO 141/2 or BIO 151/2) or anatomy/physiology (BIO 191/2).
Offered at: CUAA, CUW

BIO 301. Advan Func Anatomy & Physiol. (4 Credits)
this course expands upon concepts introduced in Functional A&P I and II with emphasis on the structure and normal function of the organ systems and their common pathologies. Special emphasis will be placed on the muscular and nervous systems. The student will also be introduced to concepts of human movement, including anatomical terms or direction, fundamental planes and axes of movement and the primary muscles that perform them. 4 credits.
Prerequisite: BIO 191/2.
Offered at: CUAA, CUW

BIO 321. Cell Biology. (4 Credits)
provides a more detailed study of the relationships between cellular structure and function. Emphasis will be placed on proteins and enzymatic reactions, plasma and cellular membranes, cytoskeleton and cell motility, cellular interactions with the environment, and cell division. Laboratory course. 4 credits.
Prerequisites: One year of general biology (BIO 141/2 or BIO 151/2 or BIO151/BIO240) and one semester of chemistry (CHEM 100, CHEM 105, or CHEM 141).
Offered at: CUAA, CUW

BIO 348. Genetics. (4 Credits)
is a study of Mendelian, molecular, and population genetics. Laboratory course. Recommended: MATH 205. 4 credits.
Prerequisites: One year of general biology (BIO 141/2 or BIO 151/2 or BIO151/BIO240).
Offered at: CUAA, CUW

BIO 351. Immunology. (3 Credits)
introduces the upper level biology student to the principles of the adaptive and innate immune systems and how these systems protect against and cause disease. Emphasis is placed on how the cells of the immune system recognize and eliminate foreign invaders from the human body. Cell Biology (BIO 321) strongly recommended. 3 credits.
Prerequisites: One year of general biology (BIO 141/2 or BIO 151/2 or BIO151/BIO240) and one semester of chemistry (CHEM 100, CHEM 105, or CHEM 141).
Offered at: CUW

BIO 367. Ecology of the Tropics. (3 Credits)
is a field study of tropical habitats and organisms as well as their interactions with humans. Requires class travel to the Caribbean or Central America. Students will experience the influence of Spanish, French, Dutch, British, African, and US cultures on this diverse region. This is a travel course that satisfies the core culture requirement. Travel costs will be in addition to tuition. For qualified students travel grants are available. Cross-listed (The Caribbean: GEO 367). 3 credits.
Prerequisite: None
Offered at: CUAA, CUW

BIO 368. Ecology of the Tropics-Lab. (1 Credit)
is an optional lab course that explores tropical organisms and ecosystems which complements BIO 367. BIO 367 plus BIO 368 satisfy the core requirement for a laboratory science course. Co-requisite: BIO 367. 1 credit.
Prerequisite: None
Offered at: CUAA, CUW

BIO 370. Ornithology. (4 Credits)
is a field oriented laboratory course designed to study birds in their natural habitat. The position of birds in the animal kingdom is studied along with their anatomy, physiology, and behavior. Laboratory course. 4 credits.
Prerequisite: BIO 240.

BIO 381. Histology. (3 Credits)
is a study of tissues present in the human body. Basic tissue types are analyzed and special emphasis is placed on how these tissues interact as components of organs. 3 credits.
Prerequisite: BIO 191/2.
Offered at: CUW

BIO 399. Biology Internship. (1-6 Credits)
provides credit for majors in the biological sciences, who obtain laboratory or field experience outside of the typical academic environment. The experience must be approved in advance by the Chair of Life and Earth Sciences. Up to 4 credits per experience. 1 - 4 credits.
Prerequisite: 16 hrs.
Offered at: CUW

BIO 410. Ecology. (4 Credits)
is a study of the interactions between the organism and its environment. Ecology surveys the biotic and abiotic environments, ecosystem types, population ecology, community structure, and succession. Laboratory course. 4 credits.
Prerequisites: BIO 141 OR BIO 151 and BIO 240 and BIO 244, and MATH 121.
Offered at: CUAA, CUW
BIO 420. Molecular Biology. (4 Credits) 
explains the molecular mechanisms underlying an array of biological 
processes including gene expression, DNA mutation and repair, genetic 
engineering, development, cancer, and stem cell regulation. There is 
a strong emphasis on current techniques used in biological research. 
The lab utilizes molecular biology techniques, including gene editing, 
in an original semester-long research project culminating in a poster 
presentation. Laboratory Course. 4 credits. 
Prerequisites: A year of general biology (BIO 151/2 or BIO 141/2) and at least 
one of: Microbiology (BIO 260), Cell Biology (BIO 321), Genetics (BIO 348), 
Biochemistry (CHEM 425).

Offered at: CUW

BIO 430. Pharmacology. (3 Credits) 
focuses on the principles of drug action. These principles will then 
be invoked in the discussion of various therapeutic interventions for 
diseases associated with selected organ systems. Treatments of 
pathogenic diseases and cancer will be discussed as well as the use of 
natural products. 3 credits. 
Prerequisites: CHEM 251/2; two semesters of biology (BIO 141/2 or BIO 151/2 
or BIO 151/240) or anatomy/physiology (BIO 191/2).

Offered at: CUAA, CUW

BIO 445. Biological Methods. (4 Credits) 
introduces the student to techniques commonly performed in the 
field of biology such as protein purification, Western blot analysis, 
immunohistochemistry, and the polymerase chain reaction. The theory 
behind the use of these techniques will also be addressed. This class 
meets the requirement of the spring semester of BIO 490. Laboratory 
Course. 4 credits. 
Prerequisites: 20 hours of biology and 8 hours of chemistry.

BIO 470. Human Physiology. (4 Credits) 
focuses on medical physiology with emphasis on cellular and organ 
system physiology. Functions of circulation, respiration, heat regulation, 
water balance, neuromuscular mechanisms, neural and endocrine 
integration will be included. 4 credits. 
Prerequisites: BIO 151/2 or BIO 191/2.

Offered at: CUW

BIO 490. Biology Senior Seminar. (1 Credit) 
looks at current issues in biology by evaluating the biological literature. A 
general topic area is selected each semester and presentations are made 
by students, faculty, and outside speakers. 1 credit. 
Prerequisites: Senior Status and 20 credits of Biology.

Offered at: CUAA, CUW

BIO 499. Undergraduate Research. (1-4 Credits) 
undergraduate research provides students with the opportunity to 
work with members of the faculty conducting research in the biological 
sciences. Students must submit appropriate form to the Department 
Chair for approval. 1 - 4 credits. 
Prerequisites: 20 hours of Biology and 8 hours of Chemistry.

Offered at: CUW