Course Offerings: Biology Majors and Minors

Winter 2025

BIOL 112 – Introduction to Animal Behavior
3 Hour(s) Credit
Designed to expose non-majors to the broad field of animal behavior. Learn the foundational concepts in animal behavior. Some topics include the evolution of behavior, communication, learning and cognition, reproductive behavior, and sociality. Use current scientific literature, assigned readings and videos, and journal activities to explore how animal behavior can be tested experimentally. Does not satisfy requirements within the biology major. **Three hours per week**. **Meets General Education: Solutions Through Science (STS)**

BIOL 211– Microbiology
4 Hour(s) Credit
Fundamental course in the study of microorganisms and their activity, with emphasis on bacteria. **Two hours lecture, four hours laboratory per week. Meets General Education Prior to Fall 2024: IVB. Prerequisites BIOL 101 or BIOL 201 or BIOL 210 or BIOL 215**

BIOL 215 – Human Anatomy & Physiology I
4 Hour(s) Credit
Comprehensive study of the structure and function of the human organism, including the integumentary, skeletal, muscle, nervous, and endocrine systems. **Meets General Education Prior to Fall 2024: IVA or IVB. Recommended Prerequisites BIOL 101 or BIOL 213**

BIOL 217 – Nutrition
3 Hour(s) Credit
This course provides a foundation for both majors and non-majors in the science of nutrition, including biological and biochemical backgrounds for the understanding of nutritional requirements. Students will have the opportunity to evaluate and alter their current diet and will participate in assignments that can be applied even after the completion of the class. **Three hours per week. Completely online and asynchronous.**

BIOL 399 – International Field Studies: Tropical Biodiversity in Costa Rica
3 Hour(s) credit
Experience a specific aspect of a biological discipline in a foreign country. Pre-tour lectures, post-tour discussion and other activities required. May be taken twice under different subtitles. May not receive credit for both BIOL 399 and BIOL 570 with the same subtitle. **Prerequisite: Permission of instructor. Fifteen hours pre-trip experience, at least 50 hours field activities over a minimum of 10 days, two-hour post-trip discussion session. Meets General Education: Experiential Learning (EL).**

Spring 2025

BIOL 106 – Forensics
3 Hour(s) Credit
Forensics is where the fields of science and law meet, often to solve crimes. Gain a blended lecture and laboratory-based introduction to the study of forensics with an emphasis placed on crime scene processing as well as the evidence that is recovered during these investigations. While focusing on the science used in solving crimes, note that potentially sensitive matters such as violent crimes and death investigations are discussed. **Three hours and 20 minutes per week. Meets General Education: Solutions Through Science (STS)**

BIOL 150 – Environmental Science: Concepts and Methods
4 Hour(s) Credit
Explores global and regional environmental processes and systems, as well as the impact of humans on these systems. Addresses current environmental issues such as climate change, habitat loss, and water pollution, emphasizing the role of science in identifying problems and finding solutions. Does not satisfy requirements within the major. **Three hours lecture, two hours lab per week. Meets General Education: Environmental Sustainability (ES), Hands-On Science (HOS). Meets General Education Prior to Fall 2024: IVA or IVB**
Cross-Listed With (May Not Receive Credit for Both) GEOG 150

BIOL 201 – Introduction to Biology: Molecular and Cell Biology
4 Hour(s) Credit
Introduction to biological molecules, cellular anatomy, and cellular function. Build fundamental understanding of molecular core concepts and skills that serve as a foundation for all more advanced coursework in biology. Emphasizes the chemistry of biology, properties of biological molecules, cellular composition, cellular function and diversity, metabolism, and genetics. One of two introductory courses (along with BIOL 202) required for biology majors. **Three hours lecture, three hours lab per week. Meets General Education: Hands-on Science (HOS), Solutions Through Science (STS). Met General Education Prior to Fall 2024: IVA and IVB. Recommended Prerequisites/ Corequisites MATH 140 or equivalent**

BIOL 202 – Introduction to Biology: Ecology and Evolution
4 Hour(s) Credit
Includes practice with the core concepts and skills that biologists use to study and preserve life. Explore several facets of biodiversity: its evolutionary origin, its ecological and societal importance, threats from human impacts, and solutions to preserve and restore biodiversity and ecosystem function to enable environmental sustainability. **Three hours lecture, three hours laboratory per week. Meets General Education: Hands-on-Science (HOS), Solutions Through Science (STS), Environmental Sustainability (ES). Met General Education Prior to Fall 2024: IVA and IVB. Recommended Prerequisites/Corequisites MATH 140 or equivalent**

BIOL 205 – Fundamentals of Human Anatomy and Physiology
4 Hour(s) Credit
Intended for health education and physical education majors, emphasizes the musculoskeletal, nervous, cardiovascular and respiratory systems. **Does not satisfy requirements within the biology major. Three hours lecture, three hours laboratory per week. Meets General Education Prior to Fall 2024: IVA or IVB**

BIOL 211– Microbiology
4 Hour(s) Credit
Fundamental course in the study of microorganisms and their activity, with emphasis on bacteria. **Two hours lecture, four hours laboratory per week. Meets General Education Prior to Fall 2024: IVB. Prerequisites BIOL 101 or BIOL 201 or BIOL 210 or BIOL 215**

BIOL 212 – Introduction to Plant Biology
4 Hour(s) Credit
Fundamental course exploring the diversity of plant life from an evolutionary perspective, the unique strategies that enable plants to grow, survive, and reproduce in different environments, and the interactions between plants and other organisms. Designed for biology majors and other science students. **Three hours lecture, three hours laboratory per week. Met General Education Prior to Fall 2024: IVB. Prerequisites BIOL 201 or BIOL 202 or BIOL 210**

BIOL 213 – Zoology
4 Hour(s) Credit
Study of the biodiversity, structure and functions of animals and animal-like protists with emphasis on their evolutionary relationships. Designed for biology majors and minors and other science majors.
Three hours lecture, three hours laboratory per week.
Meets General Education Prior to Fall 2024: IVA or IVB Prerequisites BIOL 202 or BIOL 210

BIOL 215 – Human Anatomy & Physiology I
4 Hour(s) Credit
Comprehensive study of the structure and function of the human organism, including the integumentary, skeletal, muscle, nervous, and endocrine systems. **Three hours lecture, three hours laboratory per week. Met General Education Prior to Fall 2024: IVA or IVB.**
Recommended Prerequisites BIOL 101or BIOL 213

BIOL 216 – Human Anatomy and Physiology II
4 Hour(s) Credit
Comprehensive study of the structure and function of the human organism, including the circulatory, respiratory, digestive, urinary, immune, and reproductive systems.
Three hours lecture, three hours laboratory per week. Meets General Education Prior to Fall 2024: IVB. Prerequisites C or better in BIOL 215

BIOL 303 – Conservation Biology
3 Hour(s) Credit
Study of human-induced threats to species and the ecosystems they depend on, and of the efforts to counteract these threats to protect and restore biological diversity across the globe. **Three hours per week. Prerequisites BIOL 150 or BIOL 202 or BIOL 210 or permission of instructor**

BIOL 310 – Ecology
4 Hour(s) Credit
Introduction to the interactions between organisms and their environment. Biotic and abiotic factors affecting individuals, populations, communities and ecosystems emphasized. **Three hours lecture, three hours laboratory per week. Prerequisites BIOL 202 or BIOL 210**

BIOL 320 – Biology of Vertebrates
4 Hour(s) Credit
Study of vertebrate animal life, including evolution of the major vertebrate groups, zoogeography, behavior, reproduction, thermoregulation, migration, population dynamics, ecology and conservation. Field trips emphasize wildlife biology, and identification and natural history of local species. **Three hours lecture, three hours laboratory per week. Prerequisites BIOL 213**

BIOL 322 – Parasitology
4 Hour(s) Credit
An introduction to parasites of medical importance for humans and agricultural and domestic animals. Materials emphasize parasite life cycles, infection pathways, impacts on hosts, diagnosis and whether there is currently an effective treatment. **Three hours lecture, three hours laboratory per week. Prerequisites BIOL 213**

BIOL 350 – Cell Biology
4 Hour(s) Credit
Focuses on the structure and function of eukaryotic cells. Topics covered include enzyme kinetics, membrane transport, cell signaling, intercellular protein trafficking, cellular respiration, mitosis and meiosis, the cell cycle, and cancer. **Three hours lecture, three hours laboratory per week. Prerequisites BIOL 201 or BIOL 210, and CHEM 122**

BIOL 360 – Genetic Analysis
4 Hour(s) Credit
Introduction to genetic analysis including Mendelian principles, population and quantitative genetics, cytogenetics and contributions to molecular biology. Satisfies Biology Department core requirements for genetics. **Three hours lecture, three hours laboratory per week. Prerequisites BIOL 201 or BIOL 202 or BIOL 210**. **Recommended Prerequisites MATH 155**

BIOL 370 – Molecular Genetics
4 Hour(s) Credit
Study of mechanisms of heredity emphasizing organization of the genome, mutation and regulation of gene expression. **Three hours lecture, three hours laboratory per week.**
Prerequisites BIOL 350; Pre or Corequisites CHEM 221

BIOL 375 – Evolution
3 Hour(s) Credit
As the unifying principle of biology, evolution integrates levels of biological organization, with a focus on biological changes over time and the evidence of the shared evolutionary history of all living things. Topics include speciation; extinction; population processes of selection and adaptation, genomics, and the molecular basis of evolution; sexual selection; life history evolution; and the application of evolution to medicine. **Three hours per week. Prerequisites BIOL 202 or BIOL 210**

BIOL 390 – Intermediate Special Topics in Biology: Fungi and Human Health
3 Hour(s) Credit
Fungi form an integral part of the earth's biosphere & are the third most abundant life form. They play a variety of important roles in the environment, including decomposition of organic matter & nutrient delivery to plants. Fungi are the source of many drugs, antibiotics such as penicillin, the immune suppressant cyclosporine which enables organ transplants and statins which lower cholesterol. Among the 150,000 or so described fungal species on Earth, about 10% directly or indirectly threaten human health & welfare. Major threats include mushroom poisoning, food contamination by mycotoxins, infections of crop plants & mycoses in humans. In this course we will broadly examine the relationship between fungi & human health. **Prerequisites Biol 201 & Biol 202. Three hours per week.**

BIOL 408 – Neurobiology
4 Hour(s) Credit
Explores the physiological and anatomical underpinnings of the vertebrate nervous system. **Three hours lecture, three hours lab per week. Prerequisites BIOL 215 or BIOL 350 or CHEM 417 or PSYC 301.**

BIOL 410 – Estuarine Ecology
4 Hour(s) Credit
Introduction to the physical, chemical and geological characteristics of estuaries with emphasis on East Coast estuaries such as the Chesapeake Bay. Detailed discussion of the biological and chemical processes important in estuarine ecosystems with a major emphasis on current literature and research in estuarine biology. **Three hours lecture, variable hours lab per week, with required weekend off-campus field experiences. Prerequisites BIOL 310.**

BIOL 423 – Biology of Reptiles and Amphibians
4 Hour(s) Credit
Focuses on many aspects of the study of reptiles and amphibians, including evolution, taxonomy, physiology, behavior, mating systems, ecology and conservation. Labs and field trips emphasize identification, field observation and natural history of local species.
Three hours lecture, three hours laboratory per week. Prerequisites BIOL 202 or BIOL 213.

BIOL 432 – Immunology
3 Hour(s) Credit
Study of the cellular and soluble aspects of immunology, focusing on the human immune response to pathogens and diseases of immune origin. **Three hours per week.**
Prerequisites BIOL 350. May Not Receive Credit for Both BIOL 333 and BIOL 432

BIOL 433 – Environmental Microbiology
4 Hour(s) Credit
Study of the diversity and interactions of microorganisms in their natural environments. Emphasis on habitat and metabolic diversity, community interactions and industrial applications involving microbes.
Three hours lecture, three hours laboratory per week. Meets General Education: Experiential Learning (EL). Prerequisites BIOL 211. Recommended Prerequisites BIOL 350

BIOL 445 – Virology
3 Hour(s) Credit
Study of structure, replication and pathogenesis of viruses with emphasis on animal viruses and the role of viruses in our current understanding of cell and molecular biology.
Three hours per week. Prerequisites BIOL 350.

BIOL 415, 416 – Research in Biology
1-3 Hour(s) Credit
Independent student research under the supervision of a faculty member. Schedule to be arranged individually. **Forty-five contact hours per credit hour**. **Prerequisites: Permission of instructor. May be repeatable and receive credit within the major for up to six credits combined of BIOL 415, BIOL 416, and BIOL 420.**

BIOL 420 – Readings in Biology
1-3 Hour(s) Credit
Readings designed to permit in-depth study of selected topics. Students submit written reports of their findings at the end of the semester. Specific topics are indicated on students' transcripts. Only three credits may count toward the major.
Prerequisites: Sixteen credits in biology, permission of instructor. May be repeatable and receive up to three credits within the major with a maximum of six credits combined of BIOL 415, BIOL 416, and BIOL 420.

BIOL 450 – Internship in Biology
1-3 Hour(s) Credit
Experiences in biology-related work provide students with an opportunity to use acquired biological knowledge in a professional way and to investigate potential career options. Under special circumstances this course may be taken a second time for credit, but only with permission of the internship coordinator. Does not satisfy requirements within the major. **Forty-five student contact hours per credit hour. Prerequisites Junior standing, biology major and approval of Internship Coordinator. (P/F)**

Summer 2025

BIOL 105 – Vanilla Beans and Peppercorns: The Environmental Impact of the Search for Flavor
3 Hour(s) Credit
Introduces the non-biology major to the broad principles, fundamental ideas and new discoveries in biology that significantly affect the human being's present and future existence. Relates the study of biology to the pressing social and cultural issues of today. **Does not satisfy requirements within the major. Three hours per week. Meets General Education IVB prior to Fall 2024.**

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