

BIOLOGY (BIOL)

Courses

BIOL 101 General Human Biology-GTSC1 3 Credits

Scientific method, ecology, pollution, drugs, reproduction, cancer, heart disease, nutrition, and selected body structure and function relationships.

Corequisites: BIOL 101L.

Essential Learning Categories: Natural Science with lab - Both the lab and lecture must be completed

Colorado Guaranteed Transfer (GT) Pathways General Education Curriculum

Terms Typically Offered: Fall, Spring, Summer.

BIOL 101L General Human Biology Laboratory-GTSC1 1 Credit

Scientific method, ecology, pollution, drugs, reproduction, cancer, heart disease, nutrition, and selected body structure and function relationships.

Corequisites: BIOL 101.

Essential Learning Categories: Natural Science with lab - Both the lab and lecture must be completed

Colorado Guaranteed Transfer (GT) Pathways General Education Curriculum

Terms Typically Offered: Fall, Spring, Summer.

Fees: Yes.

BIOL 105 Attributes of Living Systems-GTSC1 3 Credits

Cell structure and function, cell energetics, biochemistry, and genetics. High school chemistry recommended.

Corequisites: BIOL 105L.

Essential Learning Categories: Natural Science with lab - Both the lab and lecture must be completed

Colorado Guaranteed Transfer (GT) Pathways General Education Curriculum

Terms Typically Offered: Fall, Spring.

BIOL 105L Attributes of Living Systems Laboratory-GTSC1 1 Credit

Cell structure and function, cell energetics, biochemistry, and genetics. High school chemistry recommended.

Corequisites: BIOL 105.

Essential Learning Categories: Natural Science with lab - Both the lab and lecture must be completed

Colorado Guaranteed Transfer (GT) Pathways General Education Curriculum

Terms Typically Offered: Fall, Spring.

Fees: Yes.

BIOL 106 Principles of Animal Biology 3 Credits

Broad morphological, physiological, and ecological features of principal phyla of animals and relationships between them.

Prerequisites: BIOL 105.

Corequisites: BIOL 106L.

Terms Typically Offered: Fall, Spring.

BIOL 106L Principles of Animal Biology Laboratory 1 Credit

Broad morphological, physiological, and ecological features of principal phyla of animals and relationships between them.

Prerequisites: BIOL 105.

Corequisites: BIOL 106.

Terms Typically Offered: Fall, Spring.

Fees: Yes.

BIOL 107 Principles of Plant Biology 3 Credits

Reproductive biology, anatomy, physiology, phylogeny, and ecology of the major groups of plants.

Prerequisites: BIOL 105.

Corequisites: BIOL 107L.

Terms Typically Offered: Fall, Spring.

BIOL 107L Principles of Plant Biology Laboratory 1 Credit

Reproductive biology, anatomy, physiology, phylogeny, and ecology of the major groups of plants.

Prerequisites: BIOL 105.

Corequisites: BIOL 107.

Terms Typically Offered: Fall, Spring.

Fees: Yes.

BIOL 108 Diversity of Organisms-GTSC1 3 Credits

Broadly integrated survey of biological diversity with an emphasis on evolutionary relationships, ecology, and functional anatomical features of major groups.

Corequisites: BIOL 108L.

Essential Learning Categories: Natural Science with lab - Both the lab and lecture must be completed

Colorado Guaranteed Transfer (GT) Pathways General Education Curriculum

Terms Typically Offered: Fall, Spring.

BIOL 108L Diversity of Organisms Laboratory-GTSC1 1 Credit

Broadly integrated survey of biological diversity with an emphasis on evolutionary relationships, ecology, and functional anatomical features of major groups.

Corequisites: BIOL 108.

Essential Learning Categories: Natural Science with lab - Both the lab and lecture must be completed

Colorado Guaranteed Transfer (GT) Pathways General Education Curriculum

Terms Typically Offered: Fall, Spring.

Fees: Yes.

BIOL 113 Outdoor Survival 3 Credits

Skills necessary for biologists working in the field, including wilderness survival, wilderness medicine, camping/climbing skills, edible/poisonous plants, and urban survival skills.

Terms Typically Offered: Spring.

BIOL 196 Topics 1-3 Credits

Course may be taken multiple times up to maximum of 15 credit hours.

BIOL 208 Fundamentals of Ecology and Evolution 3 Credits

Introduction to current theory and experimental work in ecology and evolutionary biology. Topics include: biology of populations, species interactions, community structure, evolution by natural selection, population genetics, and speciation.

Prerequisites: BIOL 105/BIOL 105L; and BIOL 106/BIOL 106L or BIOL 107/BIOL 107L or BIOL 108/BIOL 108L (may be taken concurrently).

Corequisites: BIOL 208L.

Terms Typically Offered: Fall, Spring, Summer.

BIOL 208L Fundamentals of Ecology and Evolution Laboratory 1 Credit

Introduction to current theory and experimental work in ecology and evolutionary biology. Topics include: biology of populations, species interactions, community structure, evolution by natural selection, population genetics, and speciation.

Prerequisites: BIOL 105/BIOL 105L; and BIOL 106/BIOL 106L or BIOL 107/BIOL 107L or BIOL 108/BIOL 108L (may be taken concurrently).

Corequisites: BIOL 208.

Terms Typically Offered: Fall, Spring, Summer.

Fees: Yes.

BIOL 209 Human Anatomy and Physiology I 3 Credits

Study of the form and function of several major systems of the human body. For students with an interest in pre-med, nursing, human health, and biology. A background in general biology is recommended.

Corequisites: BIOL 209L.

Terms Typically Offered: Fall, Spring, Summer.

BIOL 209L Human Anatomy and Physiology I Laboratory 1 Credit

Study of the form and function of several major systems of the human body. For students with an interest in pre-med, nursing, human health, and biology. A background in general biology is recommended.

Corequisites: BIOL 209.

Terms Typically Offered: Fall, Spring, Summer.

Fees: Yes.

BIOL 210 Human Anatomy and Physiology II 3 Credits

Continued study of human anatomy and physiology, covering additional body systems and disease processes. For students with an interest in pre-med, nursing, human health, and biology.

Prerequisites: BIOL 209/BIOL 209L.

Corequisites: BIOL 210L.

Terms Typically Offered: Fall, Spring.

BIOL 210L Human Anatomy and Physiology II Laboratory 1 Credit

Continued study of human anatomy and physiology, covering additional body systems and disease processes. For students with an interest in pre-med, nursing, human health, and biology.

Prerequisites: BIOL 209/BIOL 209L.

Corequisites: BIOL 210.

Terms Typically Offered: Fall, Spring.

Fees: Yes.

BIOL 217 Forensic Entomology 2 Credits

Introduction to entomology in forensic science, focusing on how insects aid in crime scene investigations. Topics include: insect taxonomy, lifecycles, ecological roles, and forensic analysis, including estimating time of death, the influence of environmental factors on decomposition, and the legal implications of entomological evidence.

Corequisites: BIOL 217L.

Terms Typically Offered: Fall.

BIOL 217L Forensic Entomology Laboratory 1 Credit

Introduction to entomology in forensic science, focusing on how insects aid in crime scene investigations. Topics include: insect taxonomy, lifecycles, ecological roles, and forensic analysis, including estimating time of death, the influence of environmental factors on decomposition, and the legal implications of entomological evidence.

Corequisites: BIOL 217.

Terms Typically Offered: Fall.

Fees: Yes.

BIOL 241 Pathophysiology 4 Credits

Function of the human body with emphasis on interpretation of those functions in relation to disease processes.

Prerequisites: BIOL 209/BIOL 209L.

Terms Typically Offered: Fall, Spring, Summer.

BIOL 250 Introduction to Microbiology-GTSC1 3 Credits

Survey of major types of microorganisms, with an emphasis on bacteria. Microbial taxonomy, structure, metabolism, genetics, and aspects of infectious disease and the immune host response. Labs cover techniques used for growth, quantification, and identification of microorganisms, including aseptic technique, light microscopy, serial dilutions, and use of a variety of media to identify microorganisms.

Corequisites: BIOL 250L.

Essential Learning Categories: Natural Science with lab - Both the lab and lecture must be completed

Colorado Guaranteed Transfer (GT) Pathways General Education Curriculum

Terms Typically Offered: Fall, Spring.

BIOL 250L Introduction to Microbiology Laboratory-GTSC1 1 Credit

Survey of major types of microorganisms, with an emphasis on bacteria. Microbial taxonomy, structure, metabolism, genetics, and aspects of infectious disease and the immune host response. Labs cover techniques used for growth, quantification, and identification of microorganisms, including aseptic technique, light microscopy, serial dilutions, and use of a variety of media to identify microorganisms.

Corequisites: BIOL 250.

Essential Learning Categories: Natural Science with lab - Both the lab and lecture must be completed

Colorado Guaranteed Transfer (GT) Pathways General Education Curriculum

Terms Typically Offered: Fall, Spring.

Fees: Yes.

BIOL 296 Topics 1-3 Credits

Course may be taken multiple times up to maximum of 15 credit hours.

BIOL 301 Principles of Genetics 3 Credits

Principles of genetics at the organismal, cellular, and molecular levels. Includes the unique genetic processes of prokaryotic organisms, eukaryotic organisms, and viruses.

Prerequisites: BIOL 105/BIOL 105L and MATH 113 or higher.

Corequisites: BIOL 301L.

Terms Typically Offered: Fall, Spring.

BIOL 301L Principles of Genetics Laboratory 1 Credit

Principles of genetics at the organismal, cellular, and molecular levels. Includes the unique genetic processes of prokaryotic organisms, eukaryotic organisms, and viruses.

Prerequisites: BIOL 105/BIOL 105L and MATH 113 or higher.

Corequisites: BIOL 301.

Terms Typically Offered: Fall, Spring.

Fees: Yes.

BIOL 302 Cellular Biology 3 Credits

Form, function, and bioenergetics of the cell.

Prerequisites: BIOL 301/BIOL 301L and CHEM 132/CHEM 132L.

Terms Typically Offered: Fall, Spring.

BIOL 310 Developmental Biology 3 Credits

Exploration of embryonic growth and mechanisms of tissue differentiation in multicellular organisms. Emphasis on gene regulation, cell signaling, developmental patterning, and organ system formation in embryos.

Prerequisites: BIOL 301/BIOL 301L.

Terms Typically Offered: Spring.

BIOL 310L Developmental Biology Laboratory 1 Credit

Exploration of embryonic growth and mechanisms of tissue differentiation in multicellular organisms. Emphasis on gene regulation, cell signaling, developmental patterning, and organ system formation in embryos. Optional lab component for BIOL 310.

Prerequisites: BIOL 301/BIOL 301L.

Corequisites: BIOL 310.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 315 Epidemiology 3 Credits

Characteristic patterns of disease occurrence, as related to individuals, geographic location, and time. Factors affecting disease occurrence, the nature of vital statistics, sampling procedures, and study design.

Prerequisites: BIOL 105/BIOL 105L or BIOL 209/BIOL 209L.

Terms Typically Offered: Fall.

BIOL 316 Animal Behavior 3 Credits

Mechanisms and evolution of animal behavior. Analysis of a variety of social and individual behaviors across the animal kingdom at both proximate and ultimate levels.

Prerequisites: BIOL 106/BIOL 106L or BIOL 108/BIOL 108L; and BIOL 208/BIOL 208L.

Corequisites: BIOL 316L.

Terms Typically Offered: Spring.

BIOL 316L Animal Behavior Laboratory 1 Credit

Mechanisms and evolution of animal behavior. Analysis of a variety of social and individual behaviors across the animal kingdom at both proximate and ultimate levels.

Prerequisites: BIOL 106/BIOL 106L or BIOL 108/BIOL 108L; and BIOL 208/BIOL 208L.

Corequisites: BIOL 316.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 320 Plant Systematics 3 Credits

Systematics of the flowering plants, including classification, nomenclature, and phylogenetic relationships.

Prerequisites: BIOL 105/BIOL 105L; BIOL 107/BIOL 107L or BIOL 108/BIOL 108L; and BIOL 208/BIOL 208L.

Terms Typically Offered: Fall.

BIOL 321 Taxonomy of Grasses 2 Credits

Identification, classification, anatomy, ecology, and evolution of the grass, sedge, and rush plant families.

Prerequisites: BIOL 107/BIOL 107L or BIOL 108/BIOL 108L.

Corequisites: BIOL 321L.

Terms Typically Offered: Fall.

BIOL 321L Taxonomy of Grasses Laboratory 2 Credits

Identification, classification, anatomy, ecology, and evolution of the grass, sedge, and rush plant families.

Prerequisites: BIOL 107/BIOL 107L or BIOL 108/BIOL 108L.

Corequisites: BIOL 321.

Terms Typically Offered: Fall.

Fees: Yes.

BIOL 322 Plant Identification 2 Credits

Identification of the local flora, including plant anatomy and morphology as well as environmental, ecological, and historical constraints on plant distribution.

Prerequisites: BIOL 107/BIOL 107L or BIOL 108/BIOL 108L.

Corequisites: BIOL 322L.

Terms Typically Offered: Spring.

BIOL 322L Plant Identification Laboratory 2 Credits

Identification of the local flora, including plant anatomy and morphology as well as environmental, ecological, and historical constraints on plant distribution.

Prerequisites: BIOL 107/BIOL 107L or BIOL 108/BIOL 108L.

Corequisites: BIOL 322.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 331 Insect Biology 3 Credits

Insect taxonomy, evolution, ecology, and physiology.

Prerequisites: BIOL 106/BIOL 106L or BIOL 108/BIOL 108L.

Corequisites: BIOL 331L.

Terms Typically Offered: Fall.

BIOL 331L Insect Biology Laboratory 2 Credits

Insect taxonomy, evolution, ecology, and physiology.

Prerequisites: BIOL 106/BIOL 106L or BIOL 108/BIOL 108L.

Corequisites: BIOL 331.

Terms Typically Offered: Fall.

Fees: Yes.

BIOL 336 Fish Biology 3 Credits

Study of the diversity of fishes, including evolution, morphology, physiology, ecology, and conservation.

Prerequisites: BIOL 106/BIOL 106L.

Corequisites: BIOL 336L.

Terms Typically Offered: Spring.

BIOL 336L Fish Biology Laboratory 1 Credit

Study of the diversity of fishes, including evolution, morphology, physiology, ecology, and conservation.

Prerequisites: BIOL 106/BIOL 106L.

Corequisites: BIOL 336.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 338 Small Mammal Biology 3 Credits

Introduction to the life history and taxonomic classification of small mammals. Focus includes the unique constraints and physiological challenges imposed by small body size (less than 5kg).

Prerequisites: Junior or Senior Standing.

Terms Typically Offered: Fall.

BIOL 339 Winter Ecology 3 Credits

Study of terrestrial and aquatic ecosystems in winter, with a focus on the physical processes, physiological adaptations, life history strategies, and ecological interactions that characterize this season.

Prerequisites: Upper-division standing.

Terms Typically Offered: Spring.

BIOL 343 Immunology 3 Credits

Immune system of animals, with emphasis on human immune response. Includes the immune organs and both cellular and humoral responses.

Prerequisites: BIOL 302, or BIOL 301/BIOL 301L.

Terms Typically Offered: Fall.

BIOL 344 Forensic Molecular Biology 3 Credits

Molecular biology and genetics used in forensic investigations, including the genetic basis of diversity and DNA typing techniques.

Prerequisites: BIOL 105/BIOL 105L and CHEM 131/CHEM 131L.

Corequisites: BIOL 344L.

Terms Typically Offered: Spring.

BIOL 344L Forensic Molecular Biology Laboratory 1 Credit

Molecular biology and genetics used in forensic investigations, including the genetic basis of diversity and DNA typing techniques.

Prerequisites: BIOL 105/BIOL 105L and CHEM 131/CHEM 131L.

Corequisites: BIOL 344.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 350 Microbiology 3 Credits

Survey of major types of microorganisms, with emphasis on molecular biology of growth, morphology, metabolism, genetics, and ecology of microorganisms. Includes aspects of industrial microbiology, clinical microbiology, and genetic engineering. Labs cover growth, quantification, and identification of microorganisms through a variety of methods, including microscopy and molecular techniques.

Prerequisites: BIOL 105/BIOL 105L, and CHEM 121/CHEM 121L or CHEM 131/CHEM 131L.

Corequisites: BIOL 350L.

Terms Typically Offered: Spring.

BIOL 350L Microbiology Laboratory 1 Credit

Survey of major types of microorganisms, with emphasis on molecular biology of growth, morphology, metabolism, genetics, and ecology of microorganisms. Includes aspects of industrial microbiology, clinical microbiology, and genetic engineering. Labs cover growth, quantification, and identification of microorganisms through a variety of methods, including microscopy and molecular techniques.

Prerequisites: BIOL 105/BIOL 105L, and CHEM 121/CHEM 121L or CHEM 131/CHEM 131L.

Corequisites: BIOL 350.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 351 Ecological Physiology 3 Credits

Diversity of form and function among vertebrates. Emphasizes the evolution of physiological processes to ecological challenges at the organismal level.

Prerequisites: BIOL 106 or BIOL 108.

Corequisites: BIOL 351L.

Terms Typically Offered: Fall.

BIOL 351L Ecological Physiology Laboratory 1 Credit

Diversity of form and function among vertebrates. Emphasizes the evolution of physiological processes to ecological challenges at the organismal level.

Prerequisites: BIOL 106 or BIOL 108.

Corequisites: BIOL 351.

Terms Typically Offered: Fall.

Fees: Yes.

BIOL 352 Human Physiology 3 Credits

In-depth study of human function. Physiology of major human body systems will be studied at the cellular, tissue, and systemic levels, emphasizing homeostatic mechanisms and integrative function.

Prerequisites: BIOL 105 or BIOL 209.

Corequisites: BIOL 352L.

Terms Typically Offered: Spring.

BIOL 352L Human Physiology Laboratory 1 Credit

In-depth study of human function. Physiology of major human body systems will be studied at the cellular, tissue, and systemic levels, emphasizing homeostatic mechanisms and integrative function.

Prerequisites: BIOL 105 or BIOL 209.

Corequisites: BIOL 352.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 371L Laboratory Investigations in Cellular and Molecular Biology 3 Credits

Laboratory exercises and experiments that highlight important topics in cellular and molecular biology. The mechanics of laboratory science are introduced with an emphasis on modern techniques, hypothesis development, data analysis, and scientific communication.

Prerequisites: BIOL 301/BIOL 301L and CHEM 132/CHEM 132L.

Terms Typically Offered: Fall, Spring.

Fees: Yes.

BIOL 385 Nature and Philosophy of Science 3 Credits

Central concepts on the nature of scientific knowledge, including philosophical tenets that distinguish science from technology and from pseudoscience.

Terms Typically Offered: Spring.

BIOL 387 Structured Research 1-4 Credits

Independent research beyond the scope of the published curriculum.

Designed for advanced sophomore and junior level students to participate in research activities under the direction of a specific faculty member.

Prerequisites: Sophomore or junior standing, or permission of instructor.

Course may be taken multiple times up to maximum of 6 credit hours.

Fees: Yes.

BIOL 395 Independent Study 1-3 Credits

Course may be taken multiple times up to maximum of 6 credit hours.

BIOL 396 Topics 1-3 Credits

Course may be taken multiple times up to maximum of 15 credit hours.

BIOL 403 Evolution 3 Credits

Exploration of current and classical ideas in evolutionary biology. Emphasis on the phylogenetic structure of biological organization, evolution of major biological innovations in the context of geologic time, how evolutionary forces influence the genetic composition of populations, and the interactions between developmental, molecular, and evolutionary biology.

Prerequisites: BIOL 208/BIOL 208L and BIOL 301/BIOL 301L.

Terms Typically Offered: Fall.

BIOL 405 Advanced Ecological Methods 3 Credits

Quantitative methods in population, community, and ecosystems ecology.

Prerequisites: BIOL 105/BIOL 105L; and BIOL 106/BIOL 106L and BIOL 107/BIOL 107L, or BIOL 108/BIOL 108L.

Corequisites: BIOL 405L.

Terms Typically Offered: Spring.

BIOL 405L Advanced Ecological Methods Laboratory 2 Credits

Quantitative methods in population, community, and ecosystems ecology.

Prerequisites: BIOL 105/BIOL 105L; and BIOL 106/BIOL 106L and BIOL 107/BIOL 107L, or BIOL 108/BIOL 108L.

Corequisites: BIOL 405.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 406 Plant-Animal Interactions 3 Credits

Ecological, evolutionary, and applied approaches to the studies of herbivory, ant-plant interactions, pollination, and seed dispersal.

Prerequisites: BIOL 105/BIOL 105L; BIOL 106/BIOL 106L, BIOL 107/BIOL 107L, or BIOL 108/BIOL 108L; and BIOL 208/BIOL 208L.

Terms Typically Offered: Spring.

BIOL 407 Tropical Field Biology 3-5 Credits

Field research techniques, ecology, and natural history in tropical ecosystems. Conducted at international field locations.

Prerequisites: BIOL 105/BIOL 105L; and BIOL 106/BIOL 106L and BIOL 107/BIOL 107L, or BIOL 108/BIOL 108L; and BIOL 208/BIOL 208L.

Terms Typically Offered: Summer.

BIOL 408 Desert Ecology 3 Credits

Overview of desert ecology in the surrounding area and in the United States. Covers ecology of U.S. deserts, including specific plant, animal, and human adaptations. Discussion on world deserts. Field trips may be offered.

Prerequisites: BIOL 208/BIOL 208L, and junior or senior standing.

Terms Typically Offered: Spring.

BIOL 409 Gross Human Anatomy 2 Credits

Gross anatomy and cross-sectional anatomy of the human body via lectures, demonstrations, and dissections of the human cadaver.

Prerequisites: BIOL 209/BIOL 209L.

Corequisites: BIOL 409L.

Terms Typically Offered: Fall, Spring.

BIOL 409L Gross Human Anatomy Laboratory 2 Credits

Gross anatomy and cross-sectional anatomy of the human body via lectures, demonstrations, and dissections of the human cadaver.

Prerequisites: BIOL 209/BIOL 209L.

Corequisites: BIOL 409.

Terms Typically Offered: Fall, Spring.

Fees: Yes.

BIOL 410 Human Osteology 3 Credits

Study of the human skeleton, including osteology and bone detail, biological variation, animal skeletal comparisons, pathology, forensics, and proper handling, analysis, and identification of human skeletal material.

Prerequisites: BIOL 209/BIOL 209L.

Corequisites: BIOL 410L.

Terms Typically Offered: Spring.

BIOL 410L Human Osteology Laboratory 1 Credit

Study of the human skeleton, including osteology and bone detail, biological variation, animal skeletal comparisons, pathology, forensics, and proper handling, analysis, and identification of human skeletal material.

Prerequisites: BIOL 209/BIOL 209L.

Corequisites: BIOL 410.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 411 Mammalogy 3 Credits

Evolution, classification, life histories, and ecology of mammals.

Prerequisites: BIOL 106/BIOL 106L or BIOL 108/BIOL 108L; and BIOL 208/BIOL 208L.

Corequisites: BIOL 411L.

Terms Typically Offered: Spring.

BIOL 411L Mammalogy Laboratory 1 Credit

Evolution, classification, life histories, and ecology of mammals.

Prerequisites: BIOL 106/BIOL 106L or BIOL 108/BIOL 108L; and BIOL 208/BIOL 208L.

Corequisites: BIOL 411.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 412 Ornithology 3 Credits

Classification and life history of birds, including field identification.

Overnight and/or weekend field trips may be required. Three lectures and one two-hour laboratory or three-hour field trip per week.

Prerequisites: BIOL 208/BIOL 208L, and upper division standing or permission of instructor.

Corequisites: BIOL 412L.

BIOL 412L Ornithology Laboratory 1 Credit

Lab component required for BIOL 412.

Prerequisites: BIOL 208/BIOL 208L, and upper division standing or permission of instructor.

Corequisites: BIOL 412.

Fees: Yes.

BIOL 413 Herpetology 3 Credits

Introduction to the biology of amphibians and reptiles, focusing on their evolution, physiology, ecology, and natural history. Lab emphasizes identification of local species, field techniques, and skills in the scientific method, data interpretation, and critical thinking.

Prerequisites: BIOL 208/BIOL 208L, and upper division standing.

Corequisites: BIOL 413L.

Terms Typically Offered: Spring.

BIOL 413L Herpetology Laboratory 1 Credit

Introduction to the biology of amphibians and reptiles, focusing on their evolution, physiology, ecology, and natural history. Lab emphasizes identification of local species, field techniques, and skills in the scientific method, data interpretation, and critical thinking.

Prerequisites: BIOL 208/BIOL 208L, and upper division standing.

Corequisites: BIOL 413.

Terms Typically Offered: Spring.

Fees: Yes.

BIOL 414 Freshwater Ecology 3 Credits

Study of freshwater ecosystems, including physiography, biogeochemistry, and ecology.

Prerequisites: BIOL 208/BIOL 208L.

Corequisites: BIOL 414L.

Terms Typically Offered: Fall.

BIOL 414L Freshwater Ecology Laboratory 1 Credit

Study of freshwater ecosystems, including physiography, biogeochemistry, and ecology.

Prerequisites: BIOL 208/BIOL 208L.

Corequisites: BIOL 414.

Terms Typically Offered: Fall.

Fees: Yes.

BIOL 415 Tropical Ecosystems 2 Credits

Ecology of rainforests, grasslands, and desert ecosystems of the world.

Prerequisites: BIOL 105/BIOL 105L, and BIOL 106/BIOL 106L or BIOL 107/BIOL 107L, or BIOL 108/BIOL 108L, and BIOL 208/BIOL 208L.

Terms Typically Offered: Spring.

BIOL 418 Wildlife Management 3 Credits

Principles and practices of wildlife science and management. Topics addressed include: population dynamics, game species management and harvest, non-game species conservation and management, habitat management, policies and regulations, and socioeconomics.

Prerequisites: BIOL 208/BIOL 208L.

Corequisites: BIOL 418L.

Terms Typically Offered: Fall.

BIOL 418L Wildlife Management Laboratory 2 Credits

Principles and practices of wildlife science and management. Topics addressed include: population dynamics, game species management and harvest, non-game species conservation and management, habitat management, policies and regulations, and socioeconomics.

Prerequisites: BIOL 208/BIOL 208L.

Corequisites: BIOL 418.

Terms Typically Offered: Fall.

Fees: Yes.

BIOL 419 Fisheries Management 3 Credits

Principles and practices of fisheries science and management. Topics addressed include population dynamics, sport fish management and harvest, native species conservation and management, habitat management, policies and regulations, and socioeconomics.

Prerequisites: Junior or senior standing.

Corequisites: BIOL 419L.

Terms Typically Offered: Spring.

BIOL 419L Fisheries Management Laboratory 1 Credit

Principles and practices of fisheries science and management. Topics addressed include population dynamics, sport fish management and harvest, native species conservation and management, habitat management, policies and regulations, and socioeconomics.

Prerequisites: Junior or senior standing.

Corequisites: BIOL 419.

Terms Typically Offered: Spring.

BIOL 420 Conservation Biology 3 Credits

Study of the biodiversity conservation including ethics, economics, threats, extinction, protected areas and restoration ecology.

Prerequisites: BIOL 208.

Terms Typically Offered: Fall.

BIOL 425 Molecular Genetics 3 Credits

Nature and expression of genetic information at the molecular level in prokaryotic and eukaryotic organisms.

Prerequisites: BIOL 301/BIOL 301L.

Terms Typically Offered: Spring.

BIOL 427 Plant Anatomy and Physiology 3 Credits

Form, variability, and structure of the tissues comprising the body of vascular plants. Plant-water relationships, plant mineral nutrition, photosynthesis, red and blue light responses, plant hormones, and how plant growth and development at the molecular and cellular levels accounts for growth at the organismal level.

Prerequisites: BIOL 107/BIOL 107L; and CHEM 111 or CHEM 131/ CHEM 131L.

Corequisites: BIOL 427L.

Terms Typically Offered: Fall.

BIOL 427L Plant Anatomy and Physiology Laboratory 2 Credits

Form, variability, and structure of the tissues comprising the body of vascular plants. Plant-water relationships, plant mineral nutrition, photosynthesis, red and blue light responses, plant hormones, and how plant growth and development at the molecular and cellular levels accounts for growth at the organismal level.

Prerequisites: BIOL 107/BIOL 107L; and CHEM 111 or CHEM 131/ CHEM 131L.

Corequisites: BIOL 427.

Terms Typically Offered: Fall.

Fees: Yes.

BIOL 431 Animal Parasitology 3 Credits

Common and important parasites of domestic animals and man. Ecology, epidemiology, diagnosis, and control are discussed, with examples from the Protozoa, Trematoda, Cestoda, Nematoda, and Arthropoda.

Corequisites: BIOL 431L.

Terms Typically Offered: Fall.

BIOL 431L Animal Parasitology Laboratory 1 Credit

Common and important parasites of domestic animals and man. Ecology, epidemiology, diagnosis, and control are discussed, with examples from the Protozoa, Trematoda, Cestoda, Nematoda, and Arthropoda.

Corequisites: BIOL 431.

Terms Typically Offered: Fall.

Fees: Yes.

BIOL 441 Endocrinology 3 Credits

Anatomy and physiology of the endocrine system of vertebrates, including hormone function at a range of biological levels, from molecular to whole organism.

Prerequisites: BIOL 105/BIOL 105L, CHEM 132/CHEM 132L, and junior or senior standing.

Terms Typically Offered: Fall.

BIOL 442 Pharmacology 3 Credits

Principles underlying absorption, distribution, metabolism, and excretion of drugs, with emphasis on mechanisms of action and physiological responses.

Prerequisites: BIOL 209/BIOL 209L, one year of chemistry, and junior or senior standing.

Terms Typically Offered: Spring.

BIOL 450 Mycology 3 Credits

Identification and classification of local fungal and fungus-like species. Study of key morphological, physiological, and ecological traits across major phyla, with emphasis on their roles in industry, agriculture, and medicine.

Prerequisites: BIOL 107/BIOL 107L.

Corequisites: BIOL 450L.

Terms Typically Offered: Fall.

BIOL 450L Mycology Laboratory 2 Credits

Identification and classification of local fungal and fungus-like species. Study of key morphological, physiological, and ecological traits across major phyla, with emphasis on their roles in industry, agriculture, and medicine.

Prerequisites: BIOL 107/BIOL 107L.

Corequisites: BIOL 450.

Terms Typically Offered: Fall.

Fees: Yes.

BIOL 482 Senior Research 2 Credits

Designed to introduce students to appropriate procedures for conducting literature reviews, designing experiments, collecting and analyzing data, and preparing written and oral presentations of such experiments. Two lectures per week or equivalent.

Prerequisites: Senior standing, 2.80 GPA, and permission of instructor.

BIOL 483 Senior Thesis 2 Credits

In-depth thesis elaborating on major conceptual issues in biology. Students will integrate primary literature into a logical, conceptual, and synthetic framework.

Prerequisites: Senior standing.

Terms Typically Offered: Fall, Spring.

BIOL 487 Advanced Research 1-3 Credits

Provides students with an individualized research experience on a topic approved and directed by a specific faculty member. A detailed report in the form of a scientific journal article must be provided to the instructor.

Prerequisites: BIOL 482 or permission of instructor; BIOL 387 is highly recommended.

Course may be taken multiple times up to maximum of 6 credit hours.

Fees: Yes.

BIOL 493 Lab Teaching Practicum 1 Credit

Assist in laboratory teaching to support instruction and enhance student learning.

Prerequisites: Junior or senior standing or permission of instructor. Must have taken the course to be supported or have sufficient experience in other related courses.

Course may be taken multiple times up to maximum of 3 credit hours.

BIOL 494 Seminar 1 Credit

Current problems, topics, and research procedures in biological sciences and medicine. Topics announced each semester.

Prerequisites: Sophomore standing and permission of instructor.

Course may be taken 5 times for credit.

BIOL 495 Independent Study 1-3 Credits

Course may be taken multiple times up to maximum of 6 credit hours.

BIOL 496 Topics 1-3 Credits

Course may be taken multiple times up to maximum of 15 credit hours.

BIOL 498 Honors Thesis 3 Credits**BIOL 499 Internship 1-10 Credits**

Work experience obtained on a job where assignments are primarily biological projects. The amount of credit awarded is determined by the school based on the nature of the assignment.

Prerequisites: Biology major, senior standing with either a 2.80 GPA in major courses, completion of BIOL 482, or permission of instructor.

Course may be taken multiple times up to maximum of 15 credit hours.

BIOL 507 Tropical Field Biology 5 Credits

Field research techniques, ecology and natural history in lowland and montane tropical rainforests of Ecuador. Ten nine-hour labs and fifteen two-hour lectures conducted at biological field stations in Ecuador.

Prerequisites: Undergraduate degree in biology or undergraduate degree in another field with primary or secondary teaching experience in science, and permission of instructor.

BIOL 533 Marine Invertebrate Communities 3 Credits

Techniques of collection and laboratory examination of marine invertebrates from intertidal and subtidal habitats. Design and execution of a research project and a written paper are required. Seven eight-hour labs and seven two-hour lectures will be conducted at a marine biological research station.

Prerequisites: Undergraduate degree in biology or a related field and permission of instructor.

BIOL 596 Topics: 1-5 Credits

Course may be taken multiple times up to maximum of 15 credit hours.