

Spring 2026 BIOLOGY COURSE DIRECTORY

FOR ADVISING YOU WILL NEED:

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COURSE notes:

Courses fulfilling breadth requirements:

Cell & Molecular (CM)

CAS BI 203 Cell Biology

CAS BI 206 Genetics

CAS BI 216 Intensive Genetics

Ecology, Behavior & Evolution (EBE)

CAS BI 225 Behavioral Biology

CAS BI 260 Marine Biology

CAS BI 303 Evolutionary Ecology

CAS BI 306 Biology of Global Change

CAS BI 309 Evolution

CAS BI 407 Animal Behavior

Physiology & Neurobiology (PN)

CAS BI 315 Systems Physiology

CAS BI 325 Principles of Neuroscience

Upper Level Lab Courses Offered Spring 2026:

CAS BI 303 Evolutionary Ecology

CAS BI 306 Biology of Global Change

CAS BI 315 Systems Physiology

CAS BI Undergrad. Research Courses (first 4-credit semester)

CAS BB 422 Biochemistry 2

CAS BB 522 Molecular Biology Lab

CAS BB 528 Biochemistry Lab 2

REGISTRATION notes:

- **Permission required courses:** Students may not register for these courses on their own, they may email the instructor for approval
- **Full time status is 12-18 credits per semester.** Seniors are automatically awarded a fee waiver so that they may take up to 20 credits per semester without additional fees. Non-seniors with a 3.3 GPA may submit the [CAS Course Overload Fee Waiver form](#).
- **PDP, ROTC, and CAS FY/SY courses** do not count toward the 128 credits needed to graduate with a BA.
- **The following courses do not count toward the Biology or BMB major or minor:**
 - **CAS BI 114** Human Infectious Diseases
 - **CAS/MET BI 210** Human Anatomy
 - **CAS BI 528** (unless both sections of BI 527/528 are taken)
 - **CAS BI Readings or Research Courses** (2 credits)

CAS BI 108: BIOLOGY 2

Prereq: High school biology and one semester college chemistry strongly recommended

For students planning to major in the natural sciences and for premedical students. Required for biology majors. It is strongly recommended students complete CAS CH 101 (or equivalent) before this course. High school biology is assumed. Biochemistry, cell & molecular biology, Mendelian & molecular genetics, physiology, and neurobiology. Three hours lecture, three hours lab. Carries natural science divisional credit (with lab) in CAS.

Hub Units: Scientific Inquiry II, Quantitative Reasoning II, Critical Thinking, Teamwork/Collaboration.

CAS BI 114: HUMAN INFECTIOUS DISEASES

Prereq: None

Not for Biology major or minor credit. A study of the world's major human diseases, their causes, effects on history, pathology, and cures. Principles of immunology. Emphasis on present maladies such as AIDS, herpes, cancer, Monucleosis, tuberculosis, influenza, and hepatitis. This course is appropriate for non- majors and students in the health and paramedical sciences (Sargent College). Three hours lecture, three hours lab.

Notes: Not for Biology major or minor credit.

Hub Units: Scientific Inquiry I, Quantitative Reasoning II, Critical Thinking.

CAS BI 203: CELL BIOLOGY

Prereq: (CAS BI 108/116 or CAS NE 102) and CAS CH 102 or equivalent

Coreq: CAS CH 203 or equivalent

Principles of cellular organization and function: biological molecules, flow of genetic information, membranes and subcellular organelles, and cell regulation. Three hours lecture, one hour discussion.

Notes: Students may receive credit for CAS BI 203 or 213, but not both courses.

Hub Units: Scientific Inquiry 1, Quantitative Reasoning 1, Critical Thinking.

CAS BI 206: GENETICS

Prereq: BI 108/116

Coreq: CH 203 or equivalent

Principles of classical, molecular, and evolutionary genetics derived from analytical, molecular, and whole genome cytological evidence in animals, plants, and microorganisms. For CMG and BMB majors, BI 216 in the spring is highly recommended instead of BI 206. Three hours lecture, one hour discussion.

Notes: Meets with CAS BI216

Hub Units: Historical Consciousness, Quantitative Reasoning II, Critical Thinking.

CAS BI 216: INTENSIVE GENETICS

Prereq: BI 108 and BI 203 (or equivalents), and CH 203 or consent of instructor.

Advanced alternative to BI206, because (unlike BI206) BI216 does not repeat topics already taught in BI203 (or BI213) and also builds on fundamental information learned in BI203 (or BI213). BI216 also introduces students to reading research papers. Students in BI216 attend lectures with students in BI206 for the first half of the semester, after which BI216 students are taught separately from BI206 students. Principles of classical, molecular, and evolutionary genetics derived from analytical, molecular, and whole genome cytological evidence in animals, plants, and microorganisms. Three hours lecture, one hour discussion. Students may receive credit for CAS BI 216 or 206, but not both courses.

Notes: Meets w/CAS BI206.

Hub Units: Historical Consciousness, Quantitative Reasoning II, Research and Information Literacy.

CAS BI 328: CELL BIOLOGY & TRANSLATIONAL MEDICINE

Prereq: CAS BI 203

This course offers an in-depth exploration of the cell biology mechanisms and treatment strategies associated with several significant diseases including heart disease, cancer, respiratory, Alzheimer's and viral diseases. Students will primarily engage with recent research papers that employ cutting-edge molecular techniques

Hub Units: Scientific Inquiry II, Teamwork/Collaboration.

CAS BI 385: IMMUNOLOGY

Prereq: BI 203, BI 206 and junior standing

The constituents and regulation of mammalian immune systems are described at the levels of the gene, protein, and cell. Topics include nonspecific, T cell and B cell recognition and responses, genetics of immune receptors, inflammation, tolerance, memory, and evolution and manipulation of defense systems.

CAS BI 394: TOPICS IN BIOLOGY: RNA THERAPUTICS AND PERSONALIZED MEDICINE

Prereq: BI 108

This course explores quantitative molecular biology with a focus on gene regulation, genetic diseases, and emerging therapies. Topics include the Human Genome Project, next-generation sequencing, RNA-seq analysis, RNA processing, and gene expression in cancer. Students will gain hands-on experience in R and Python for bioinformatics, apply statistical methods to gene regulation, and examine cutting-edge therapies like antisense oligonucleotides in personalized medicine. Designed for undergraduates in pre-med, biology, and health sciences, the course requires basic molecular biology knowledge but no prior coding experience. Through lectures, discussions, and workshops, students will analyze gene regulation, interpret RNA-seq data, engage with primary literature, and develop practical bioinformatics skills.

CAS BI 411: MICROBIOME: OUR INTIMATE RELATIONSHIP WITH MICROORGANISMS

Prereq: BI 203 (or equivalent) and BI 206 (or equivalent)

There are more bacterial cells inhabiting our bodies than actual human cells. This abundant and diverse population of microbes – referred to as the “microbiome” – colonizes several tissues in our body and plays important roles in maintaining our health. Topics will include the evolutionary, ecological, cellular, molecular and medical aspects of the interactions between animals and the bacterial communities that have evolved with them.

Notes: Meets with GRS BI 611.

CAS BB 422: BIOCHEMISTRY 2

Prereq: First Year Writing Seminar (e.g., WR 100 or WR 120) and CASBI 421 or CASCH 421 or CASBB 421 or equivalent.

Cell metabolism, with special emphasis on the uptake of food materials, the integration and regulation of catabolic, anabolic, and anaplerotic routes, and the generation and utilization of energy. Lectures include consideration of intermediary metabolism in prokaryotic and eukaryotic organisms with clinical correlations

Notes: This class meets with CAS BB 621, and MET BB 421.

Hub Units: Writing-Intensive Course, Research and Information Literacy, Teamwork/Collaboration, Creativity/Innovation.

CAS BB 552: MOLECULAR BIOLOGY LAB

Introduction to techniques of molecular biology research, including analysis of DNA, RNA, and protein molecules by techniques such as restriction enzyme digestions, PCR, subcloning, DNA sequencing and analysis, reporter gene assays, protein-protein interactions, and culturing and yeast molecular biology.

Hub Units: Teamwork/Collaboration, Creativity/Innovation.

CAS BB 528: BIOCHEMISTRY LAB 2

Prereq: First Year Writing Seminar (e.g., WR 100 or WR 120) AND CASBB 421 or CASBB 527.

Emphasizes protein, carbohydrate, nucleic acid, and lipid chemistry. Development and use of modern instrumentation and techniques. Four hours lab, one hour discussion.

Notes: Same as laboratory portion of CASBB 422. Required for BMB students enrolled concurrently in MMEDIC.

Hub Units: Writing-Intensive.



CELL & MOLECULAR

CAS BI 553: MOLECULAR BIOLOGY 2

Prereq: BI 552, recommended: BI/CH 421/422

This course focuses on gene regulatory mechanisms with emphasis on eukaryotes, and current research in molecular biology. General areas of focus include genomics, gene regulation, and cell signaling. Course topics include genome organization and DNA rearrangement, RNA interference and noncoding RNAs, gene editing, mouse transgenic approaches, signal transduction pathways, chromatin structure, and cell cycle. Research articles and molecular biology approaches will be discussed.

CAS BI 559: QUANTITATIVE MICROBIOLOGY

Prereq: BI 108 or equivalent, MA 121 or equivalent, and PY 105 or equivalent

Important bacterial behaviors and phenomena are described with mathematical models including growth, multispecies interactions, motility, and cell differentiation. Every subject is motivated directly by experimental data, with specific discussion of the techniques used to collect the data, their biases, and their limitations. The goal is to show how quantitative models can give a unified, conceptual understanding of complicated, living systems and generate new hypotheses for experiments. Homework assignments will be in python and the course will include an introduction to python. No prior programming experience needed. Even though the course deals specifically with prokaryotes, the techniques and approaches learned are applicable to any area of the life sciences.

CAS BI 565: FUNCTIONAL GENOMICS

Prereq: BI 552, First Year Writing Seminar (e.g., WR 100 or WR 120)

This paper- and problem-based course focuses on functional genomics topics such as genetic variation, genome organization, and mechanisms of transcriptional and post-transcriptional gene regulation. Up-to-date methods include NGS, genome editing, ChIP-seq, chromatin accessibility assays, transcriptomics, and proteomics.

Hub Units: Oral and/or Signed Communication, Writing-Intensive Course, Critical Thinking.

CAS BI 575: TECHNIQUES IN CELLULAR AND MOLECULAR NEUROSCIENCE

Prereq: (CASBI325) or either CASBI201 or CASNE201, and junior or senior standing, or consent of instructor.

Laboratory course in which techniques used in cellular neuroscience are taught. Subjects covered include sensory coding, synaptic transmission, neural excitability, and cellular neuroanatomy.

CAS BI 576: CARCINOGENESIS

Prereq: BI 203, BI 206, BI 552

The course covers multiple aspects of cancer biology with a focus on molecular mechanisms underlying cancer development and progression, and the implications for therapy. Topics include oncogenes, tumor suppressors, apoptosis, angiogenesis, metastasis, mouse models, cancer immunity, immunotherapy, and chemotherapy. Emphasis on current research.

Note: Students may not receive credit for more than one of the following courses: CAS BI 327, CAS BI 576, and GMS BT 520.

A list of courses accepted toward the CMG & BMB specialization can be found in the Bulletin at:

www.bu.edu/biology/cm-g-bulletin
www.bu.edu/bmb/bulletin

ECOLOGY, BEHAVIOR & EVOLUTION

CAS BI 225: BEHAVIORAL BIOLOGY

Prereq: BI 107, BI 108, WR 120/CC 101 and sophomore standing. Seats reserved for Behavioral Biology majors; other students must receive consent of instructor. BI 225 and BI 407 cannot be taken concurrently, and BI 225 cannot be taken following completion of BI 407.

Introduction to the evolution, ecology, physiology, neurobiology and genetics of behavior, from classic studies to current trends. Topics include behavioral adaptation, hormones and behavior, nerve cells, circuits, neuromodulators and behavior, behavioral genetics and genomics, the development of behavior, communication, reproductive behavior, social evolution and culture, cooperation and altruism, sociality and brain evolution. Emphasis on the integrative analysis of behavior.

Hub Units: Oral and/or Signed Communication, Writing-Intensive Course, Philosophical Inquiry and Life's Meanings.

CAS BI 260: MARINE BIOLOGY

Prereq: BI 107

Life in the seas: its ecology, evolution, and human impacts. Includes behavioral, physiological, structural, ecological, and evolutionary perspectives. A prerequisite for the Marine Semester.

Hub Units: Scientific Inquiry I, Critical Thinking, Research and Information Literacy.

CAS BI 303: EVOLUTIONARY ECOLOGY

Prereq: BI 107, recommended: BI 206, MA 121/123

Investigation of ecological processes and patterns at the individual, population, and community level. An evolutionary approach is emphasized. One day-long field trip required.

Hub Units: Scientific Inquiry II, Quantitative Reasoning II, Digital/Multimedia Expression.

CAS BI 306: BIOLOGY OF GLOBAL CHANGE

Prereq: BI 107, Recommended: CH 101 or CH 171

The ecological impacts of human activity on terrestrial and aquatic ecosystems. Climate change, forest decline, eutrophication, acidification, loss of species diversity, and restoration of ecosystems.

Hub Units: Scientific Inquiry II, Ethical Reasoning, Research and Information Literacy.

CAS BI 309: EVOLUTION

Prereq: BI 107 and BI 108 or equivalent

Introduction to modern concepts, controversies, and analytical approaches in evolutionary biology. Topics include adaptation, natural and sexual selection, species and speciation, phylogenetics, comparative analysis, basic population and quantitative genetics, origin of novelty, adaptive radiation, development and evolution.

Hub Units: Ethical Reasoning.

CAS BI 413: MICROBIAL ECOLOGY

Prereq: BI 107, BI 108, CH 101, and CH 102

Microbes (bacteria, archaea, and fungi) are the most diverse, abundant living organisms and microbial communities are key contributors to ecosystems. Topics include microbial cell structure and physiology, microbe-microbe interactions including biofilm formation and quorum sensing, and microbe-environment interactions.

CAS BI 414: ORNITHOLOGY

Prereq: BI 107

Examines the behavior, ecology, morphology, physiology, classification, and evolution of birds. Flight, navigation, migration, territorial courtship, nesting, and parental behavior. Field trips. Three hours lecture, one hour discussion and demonstrations.

Hub Units: Historical Consciousness, Scientific Inquiry II, Critical Thinking.

ECOLOGY, BEHAVIOR & EVOLUTION

CAS BI 423: MARINE BIOGEOCHEMISTRY

Prereq: CH 101 and CH 102 or BUMP semester and EE 144

Oceanic nutrient and biogeochemical cycling in the context of the marine response to global change. Topics include oceanic productivity, iron limitation, oceanic glacial carbon dioxide budget, biogenic particle fluxes, oceanic glacial-interglacial biogeochemistry.

Notes: Meets with EE 423.

Hub Units: Philosophical Inquiry and Life's Meaning, Scientific Inquiry II, Research and Information Literacy.

CAS BI 500: SHARK BIOLOGY & CONSERVATION

Prereq: some background in ecology and/or evolution recommended.

Explores the natural history and behavior of sharks and their relationship to other animals in the ecosystem. Conservation of sharks and other elasmobranchs is crucial to ecosystem function and requires accurate scientific knowledge to implement the best conservation practices.

Hub Units: Oral and/or Signed Communication, Scientific Inquiry II, Research and Information Literacy.

CAS BI 505: EVOLUTION AND DEVELOPMENT

This course focuses on the evolution of development. We explore how biodiversity arises by examining the intersection of development, genetics, evolution and ecology. Topics include: the origin of novel traits, developmental constraints, heterochrony, epigenetic inheritance, evolution of gene networks, developmental systems drift and the evolution of complex traits. We also cover common tools used in Evo Devo research, including: RNAseq, RNA interference, CRISPR/Cas-9 and in situ hybridization.

CAS BI 508: BEHAVIORAL ECOLOGY

Prereq: One upper-level EBE course

Examination of the adaptive significance of behavior in an ecological context. Topics include the evolution of social behavior, mating systems, sexual selection, alternative reproductive behaviors, life history strategies, optimal foraging, territoriality, cooperation and conflict, host-parasite co-evolution, the ecology of communication, and comparative analyses.

CAS BI 509: METAPOPULATION ECOLOGY

Prereq: First Year Writing Seminar (e.g., WR 120)

Introduces students to metapopulation ecology through the lens of propagule dispersal and population connectivity

Hub units: Oral and/or Signed Communication, Writing-Intensive Course, Research and Information Literacy.

CAS BI 530: FOREST ECOLOGY

Prereq: BI 107 and BI 303 or BI 306

The major biotic and abiotic factors influencing forest ecosystem composition, structure, and function. Role of solar radiation, hydrology, soils, succession, and management of forest ecosystems. Includes New England case study. Three hours lecture plus discussion.

Notes: Meets with GE 530.

Hub units: Oral and/or Signed Communication, Scientific Inquiry II, Research and Information Literacy.

CAS BI 550: MARINE GENOMICS

Prereq: BI 108 or equivalent.

Covers the evolution of genomes, the architecture of gene networks, and the connection between genotype and phenotype in marine organisms, as well as the technical development of modern genomics. Student research projects utilize modern genomics experimental approaches.

Hub units: Teamwork/Collaboration.

CAS BI 586: ECOLOGICAL GENOMICS

Prereq: (CAS BI 206 or BI 216) and (MA 115 or MA 213); or consent of instructor. Recommended: BI 303 and BI 309.

An introduction to physiological principles applied across all levels of organization (cell, tissue, organ system). Preparation for more advanced courses in physiology. Topics include homeostasis and neural, muscle, respiratory, cardiovascular, renal, endocrine, gastrointestinal, and metabolic physiology.

Hub Units: Digital/Multimedia Expression, Creativity/Innovation, Teamwork/Collaboration.



ECOLOGY, BEHAVIOR & EVOLUTION

CAS BI 594: TOPICS IN BIOLOGY: SCIENCE COMMUNICATION IN BIOLOGY

Prereq: None

The ability to communicate to multiple audiences is an essential skill to develop for a scientific career. From field specific grant writing to community-oriented podcast creation, we will workshop and gain tools of science communication. Content will be delivered through readings, critical analysis, guest lectures, presentations, and peer-review workshops. Paper discussion days will include writing prompts and in-depth analysis

CAS BI 594: TOPICS IN BIOLOGY: SOCIOECOIMMUNOLOGY

**A list of courses
accepted toward the
SBB & ECB specializa-
tion can be found in the
Bulletin at:**

www.bu.edu/biology/ecb-bulletin
www.bu.edu/biology/sbb-bulletin

PHYSIOLOGY & NEUROBIOLOGY

CAS BI 210: HUMAN ANATOMY

Prereq: (CASBI105 OR CASBI108) or equivalent.

Intensive pre-professional course for students whose programs require anatomy. Gross structure of the human body; skeletal, muscular, nervous, respiratory, circulatory, digestive, urinary, and reproductive systems. Lab requires dissection.

Notes: Not for Biology or BMB major/minor credit (BI 310 is recommended for major credit instead).

Hub Units: Scientific Inquiry I, Digital/Multimedia Expression, Creativity/Innovation.

CAS BI 315: SYSTEMS PHYSIOLOGY

Prereq: (CAS BI 108 or ENG BE 209), WR 120 or equivalent, and CAS CH 101 and CAS CH 102, or equivalent.

An introduction to physiological principles applied across all levels of organization (cell, tissue, organ system). Preparation for more advanced courses in physiology. Topics include homeostasis and neural, muscle, respiratory, cardiovascular, renal, endocrine, gastrointestinal, and metabolic physiology.

Hub Units: Scientific Inquiry 2, Writing-Intensive, Critical Thinking, Teamwork/Collaboration.

CAS BI 325: PRINCIPLES OF NEUROSCIENCE

Prereq: CAS BI 203 or consent of instructor

This course will introduce fundamentals of the nervous system at descriptive scales ranging from individual cells to the entire brain. Topics will include biophysics of excitable membranes, synaptic transmission, sensory and motor systems, learning and memory, plasticity, neuromodulation, and the biological basis of complex behaviors.

Hub Units: Scientific Inquiry II, Critical Thinking.

CAS BI 331: PHYSIOLOGY OF SEX AND REPRODUCTION

Prereq: CAS BI 315 or BI 211

In this course we will learn the physiological mechanisms behind fertility, gametogenesis, copulation, pregnancy and birth. We will explore the impacts of biological reproduction on the body and we will connect these topics to our everyday world. We utilize diverse perspectives and language in this class. Class time is split between active learning and lecture time. Grades are based on daily work, quizzes and presentations.

Notes: Meets with SAR HS331.

CAS BI 447: NEUROTOXINS IN BIOLOGY, MEDICINE, AGRICULTURE AND WAR

Prereq: BI 203 or NE 203 or equivalent.

We will start by examining how neurotoxins in different animals are used for distinct behavioral needs, such as defense versus predation. Examining evolutionary lineage of different types Neurotoxins will also be discussed and give us insights on how neurotoxins evolved and their roles in evolutionary "arm race". We will also cover mechanisms of neurotoxin actions at cellular and molecular levels. At system level, envenomation by poisonous animal is of clinical importance in many parts of the world, consequences of venoms on mammalian physiological systems will be discussed. In addition to naturally occurring neurotoxins, many synthetic chemicals used as pesticides and chemical weapons are also neurotoxins. We will discuss the history, mechanisms and physiological effects of these manmade agents.

Hub Units: Quantitative Reasoning I, Critical Thinking.

CAS BI 481: MOLECULAR BIOLOGY OF THE NEURON

Prereq: BI 203

Topics include electrical properties of neurons, a survey of neurotransmitters, molecular structure and function of receptors, synaptic transmission, intracellular signaling, and the molecular biology governing neurodevelopment and neurological disorders. Three hours lecture, one hour discussion.

Notes: Meets with CAS NE 481 and GRS BI 681.

Hub Units: Oral and/or Signed Communication, Scientific Inquiry II, Research and Information Literacy.

PHYSIOLOGY & NEUROBIOLOGY

CAS BI 542: NEUROETHOLOGY

Prereq: CAS BI 325 or CAS NE 203, or consent of instructor.

An in-depth study of the neural mechanisms underlying natural behaviors in animals, integrating perspectives from behavioral ecology and neurobiology. Behaviors that are central to fitness will be studied in detail, including the sensory and motor bases of prey detection, predator avoidance, communication, courtship, navigation, and migration. A wide variety of non-model organisms such as honey bees, owls, bats, and crickets will be discussed. Lectures are integrated with student-led discussions of relevant research papers.

CAS BI 556: DRUG DISCOVERY IN NEUROSCIENCE

Prereq: CASNE 102 (or BI 108), CH 102, and NE/PS 333

The process of drug discovery is complex especially when a drug is intended to treat a neurological disease. This discussion-heavy course examines the specific challenges of modern neuroscience drug discovery, including: target selection, pharmacokinetics, pharmacodynamics, modeling of disease states within the context of the drivers and limitations of the Drug Discovery Industry.

BU Units: Digital/Multimedia Expression, Scientific Inquiry II, Creativity/Innovation.

CAS BI 594: TOPICS IN BIOLOGY: BIG DATA IN NEUROSCIENCE

Understanding the brain involves deconstructing the nervous system into its basic building blocks, determining how they are assembled into circuits, and how information is processed and computed across the system. The field of neuroscience is undergoing a transformation fueled by the massive, complex datasets that offer an increasingly complete and detailed view of the brain's molecular composition, wiring, and activity patterns. This course invites students to explore how researchers collect, organize, and interpret data to answer fundamental questions about the brain and behavior. presentation and discussion.

CAS BI 594: TOPICS IN BIOLOGY: NEUROBIOLOGY OF DISEASE

This course reviews recent topics and readings in the field of neurodegeneration that span disorders affecting neurodevelopment, diseases of the peripheral and central nervous system to immune-related diseases affecting the nervous system and finally disorders of higher function such as addiction, sleep disorders and schizophrenia. Specifically, this advanced course will investigate the molecular and cellular basis of brain disorders and how these disruptions affect neuronal circuits. Lectures integrate foundational concepts with emphasis on experimental approaches used to study these disorders, including genetic models, imaging, transcriptomics and proteomics, and electrophysiology.

CAS BI 599: PHYSIOLOGY OF THE SYNAPSE

Prereq: junior standing. Recommended: CAS BI 325 or BI 445 or BI 481.

Neuron development and maturation, synapse formation, structure and molecular components of synapses, synaptic transmission, synaptic plasticity, neurotransmitter receptors, cellular basis for learning and memory, synaptic pathology in neurological diseases. Two hours lecture, two hours paper presentation and discussion.

RESEARCH & READINGS

UNDERGRADUATE RESEARCH IN BIOLOGY

Undergraduate Research in Biology courses (CAS BI 140 - CAS BI 453) require an online application. For more information on research requirements and to apply, visit www.bu.edu/biology/ug-research. Time commitment is a minimum of 6 hours a week for 2-credit research and 12 hours a week for 4-credit research. 4-cr research courses can fulfill up to two Electives, *one of which can count toward the three-Lab requirement for Biology and specialization majors*.

CAS BI 140: FIRST YEAR RESEARCH IN BIOLOGY 1

Prereq: *first year standing, consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for Biology major or minor credit. First semester first year laboratory research under the supervision of a Biology faculty mentor. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor.

CAS BI 241: SOPHOMORE RESEARCH IN BIOLOGY 2

Prereq: *sophomore standing, (BI 140 or BI 240 or UROP semester or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for Biology major or minor credit. Second semester sophomore laboratory research under the supervision of a Biology faculty mentor. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor.

CAS BI 141: FIRST YEAR RESEARCH IN BIOLOGY 2

Prereq: *first year standing, (BI 140 or UROP semester or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for Biology major or minor credit. Second semester first year laboratory research under the supervision of a Biology faculty mentor. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor.

CAS BI 340: JUNIOR RESEARCH IN BIOLOGY 1 (2 CREDITS)

Prereq: *junior standing, consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for Biology major or minor credit. First semester junior research including the use of research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings required.

Hub Units: Research and Information Literacy

CAS BI 240: SOPHOMORE RESEARCH IN BIOLOGY 1

Prereq: *sophomore standing, consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for Biology major or minor credit. First semester sophomore laboratory research under the supervision of a Biology faculty mentor. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor.

CAS BI 341: JUNIOR RESEARCH IN BIOLOGY 2 (2 CREDITS)

Prereq: *junior standing, consent of instructor (faculty research mentor/sponsor), BI 340 or BI 350 or 2 semesters of first year (BI 140/141) or sophomore research (BI 240/241) or UROP semester or equivalent, and approved application.*

[2 cr] Not for Biology major or minor credit. Second semester junior research including the use of research literature and active participation at group meetings. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor.

Hub Units: Oral/Signed Communication

RESEARCH & READINGS

CAS BI 350: JUNIOR RESEARCH IN BIOLOGY 1 (4 CREDITS)

Prereq: junior standing, consent of instructor (faculty research mentor/sponsor), and approved application.

First semester junior research including the use of research literature and active participation at group meetings. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance with oral presentations at group meetings required.

Hub Units: Research and Information Literacy and Oral/Signed Communication

CAS BI 450: SENIOR RESEARCH IN BIOLOGY 1

Prereq: senior standing, consent of instructor (faculty research mentor/sponsor), and approved application.

First semester senior research including the use of research literature and active participation at group meetings. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings required.

Hub Units: Research and Information Literacy and Oral/Signed Communication

CAS BI 351: JUNIOR RESEARCH IN BIOLOGY 2 (4 CREDITS)

Prereq: junior standing, [BI 340 or BI 350 or 2 semesters of first year (BI 140/141) or sophomore research (BI 240/241) or UROP semester or equivalent], consent of instructor (faculty research mentor/sponsor), and approved application.

Second semester junior research including the use of research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Students expected to attend group meetings and take a lead and make creative contributions to projects.

Hub Units: Research and Information Literacy and Creativity/Innovation

CAS BI 451: SENIOR RESEARCH IN BIOLOGY 2

Prereq: senior standing, [BI 340 or BI 350 or BI 450 or 2 semesters of first year (BI 140/141) or sophomore research (BI 240/241) or UROP semester or equivalent], consent of instructor (faculty research mentor/sponsor), and approved application.

Second semester senior research including the use of the research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Students expected to attend group meetings and take a lead and make creative contributions to projects.

Hub Units: Research and Information Literacy and Creativity/Innovation

CAS BI 352: JUNIOR RESEARCH IN BIOLOGY 3 (4 CREDITS)

Prereq: junior standing, (BI 341 or BI 351 or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.

Third semester junior research including the use of the research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required. Students expected to take a lead and make creative contributions to projects.

Hub Units: Writing-Intensive and Creativity/Innovation

CAS BI 452: SENIOR RESEARCH IN BIOLOGY 3

Prereq: senior standing, (BI 341 or BI 351 or BI 451 or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.

Third semester senior research including the use of research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required. Students expected to take a lead and make creative contributions to projects.

Hub Units: Writing-Intensive and Creativity/Innovation

RESEARCH & READINGS

CAS BI 453: SENIOR RESEARCH IN BIOLOGY 4

Prereq: senior standing, (BI 352 or BI 452 or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.

Coreq: CAS BI 497 or BI 498

Fourth semester senior research including the use of research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required.

CAS BI 582: SEMINAR IN BIOLOGY

Prereq: consent of instructor. Open to seniors and graduate students concentrating in biology.

Informal discussion and student reports on subjects of current interest based on an intensive study of the literature. Topics and prerequisites vary. Not for Biology major or minor credit unless two sections of BI 581/582 are taken. Topics may include Individual Development Plans (IDPs), career panels for industry, non-profit, or government jobs, oral/written presentation skills, and will be shaped by the preferences of students in the class.

HONORS RESEARCH IN BIOLOGY

Honors Research in Biology offers students the ability to participate in two semesters of mentored 4-credit research (CAS BI 401 and 402) and a 2-credit research seminar (CAS BI 497 or 498). Students also write and defend an honors thesis on their research. For more information on research requirements and to apply, visit www.bu.edu/biology/research-credit. Time commitment is minimum 12 hours/week in Lab or fieldwork, meetings, data analysis, and writing.

CAS BI 401/402: HONORS RESEARCH IN BIOLOGY 1 & 2

Prereq: senior standing, cumulative GPA of at least 3.5, and approval of the Biology Research and Honors Committee.

Coreq: CAS BB497 and CAS BB498

Independent laboratory research under the supervision of a faculty member in a two-semester course. Overall course grade is determined by laboratory performance, oral presentation, written thesis, and defense of the thesis before a committee of three BMB faculty members. Successful completion of both CAS BB 401 and BB 402, with a minimum grade of B+, is required to graduate with honors in the major. Students must also present a research talk at the BMB symposium at the end of the Spring semester of the academic year.

Hub Units: Oral and/or Signed Communication, Research and Information Literacy, Writing-Intensive Course, Creativity/Innovation

CAS BI 498: HONORS RESEARCH IN BIOLOGY SEMINAR 2

Prereq: For students currently enrolled in BI 401, BI 402, or BI 453 in the spring semester.

[2 cr] A 2-credit weekly research seminar for students in BI 401, BI 402, or BI 453 in the spring semester. Students learn and present digitally produced descriptions of their research and prepare their theses for defense under the guidance of the Research and Honors Committee. A minimum grade of B+ in this course and BI 402 is required to graduate with honors. Students participate in only one course, either BI 497 or BI 498.

Hub Units: Digital/Multimedia Expression

RESEARCH & READINGS

GRADUATE RESEARCH IN BIOLOGY

Graduate Research in Biology is offered as part of the BA/MS program. This dual degree program is only open to Biology and specialization majors. Students will receive both Bachelor's of Arts and Master's of Science degrees upon graduation. For more information on the BA/MS program, visit <https://www.bu.edu/biology/undergrad/bams/>.

CAS BI 595: MASTER'S RESEARCH IN BIOLOGY

Prereq: Admission into the MS or BA/MS combined program

Biology laboratory research conducted under supervision of a faculty member. Externships are acceptable with prior approval. Minimum of 7.5 or 15 hours per week in the lab, culminating in submission of a written progress report.

GRADUATE READINGS IN BIOLOGY

Graduate Readings in Biology is offered as part of the BA/MS program. This dual degree program is only open to Biology and specialization majors. Students will receive both Bachelor's of Arts and Master's of Science degrees upon graduation. For more information on the BA/MS program, visit <https://www.bu.edu/biology/undergrad/bams/>.

GRS BI 701: GRADUATE READINGS IN BIOLOGY

Prereq: consent of instructor, limited to BA/MS students and graduate students in the scholarly paper MS program.

Library research on well-defined subjects determined in consultation with faculty member.

READINGS IN BIOLOGY

Readings in Biology offers students the opportunity to do library research on a chosen topic in the biological sciences. Students must ask a Biology faculty member familiar with the topic to be their sponsor and submit the application found at www.bu.edu/biology/forms. These courses are often used as preparation for Undergraduate Research in Biology or Honors Research in Biology.

CAS BI 172: READINGS IN BIOLOGY 1

Prereq: freshman standing, consent of instructor (Biology faculty mentor), and approved application.

[2 cr] **Not for Biology major or minor credit.** Library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member.

CAS BI 372: READINGS IN BIOLOGY 3

Prereq: junior standing, consent of instructor (Biology faculty mentor), and approved application.

[2 cr] **Not for Biology major or minor credit.** Library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member.

CAS BI 272: READINGS IN BIOLOGY 2

Prereq: sophomore standing, consent of instructor (Biology faculty mentor), and approved application.

[2 cr] **Not for Biology major or minor credit.** Library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member.

CAS BI 472: READINGS IN BIOLOGY 4

Prereq: junior or senior standing, cumulative GPA in biology of at least 3.0, and consent of instructor (Biology faculty mentor).

[2 cr] **Not for Biology major or minor credit.** Intensive library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member. May be taken as preparation for Undergraduate Research or Honors Research in Biology.

RESEARCH & READINGS

UNDERGRADUATE RESEARCH IN BMB

Undergraduate Research in Biochemistry and Molecular Biology courses (CAS BB 140 - CAS BB 453) require an application. For more information on research requirements and to apply, visit www.bu.edu/bmb/research. Time commitment is a minimum of 6 hours a week for 2-credit research and 12 hours a week for 4-credit research, not including preparation and evaluation. 4-cr research courses can fulfill an elective for BMB majors. Two semesters of senior-level research can fulfill the Advanced Lab Elective for BMB majors.

CAS BB 140: FIRST YEAR RESEARCH IN BMB 1

Prereq: *first year standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for BMB major credit. First semester first year laboratory research under the supervision of a BMB faculty mentor. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor.

CAS BB 141: FIRST YEAR RESEARCH IN BMB 2

Prereq: *first year standing, (BB 140 or UROP semester or equivalent), GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for BMB major credit. Second semester first year laboratory research under the supervision of a BMB faculty mentor. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor.

CAS BB 240: SOPHOMORE RESEARCH IN BMB 1

Prereq: *sophomore standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for BMB major credit. First-semester sophomore research in BMB. Application through the BMB Program. Minimum 6 hours/week. Students conduct research under supervision of faculty mentor.

CAS BB 241: SOPHOMORE RESEARCH IN BMB 2

Prereq: *sophomore standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, BB 140 or BB 141 or BB 240 or UROP semester or equivalent, consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for BMB major credit. Second-semester sophomore research in BMB. Application through the BMB Program. Minimum 6 hours/week. Students conduct research under supervision of faculty mentor.

CAS BB 340: JUNIOR RESEARCH IN BMB 1 (2 CREDITS)

Prereq: *junior standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.*

[2 cr] Not for BMB major credit. First semester junior research including the use of research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings required.

Hub Units: Research and Information Literacy

CAS BB 341: JUNIOR RESEARCH IN BMB 2 (2 CREDITS)

Prereq: *major GPA of at least 3.0, junior standing, and either BB 340, BB 350, full-time summer UROP, or any 4 credits of BB 140, BB 141, BB 240, and BB 241*

[2 cr] Not for BMB major credit. Second-semester junior research including required participation in group meetings. Conduct research under supervision of faculty mentor. Application through BMB Department. Minimum 6 hours/week. Two-credit research does not carry major credit in BMB and cannot be combined with another 2-credit course for elective credit.

Hub Units: Oral and/or Signed Communication

CAS BB 350: JUNIOR RESEARCH IN BMB 1 (4 CREDITS)

Prereq: *major GPA of at least 3.0 and junior standing.*

First-semester junior research including training in the use of research literature and active participation at group meetings. Application through the BMB Program. Students conduct research under supervision of a faculty mentor. Attendance at group meetings required. Minimum 12 hours/week in labwork and data analysis.

Hub Units: Oral and/or Signed Communication, Research and Information Literacy

RESEARCH & READINGS

CAS BB 351: JUNIOR RESEARCH IN BMB 2 (4 CREDITS)

Prereq: major GPA of at least 3.0, junior standing, and either BB 340, BB 350, full-time summer UROP, or any 4 credits of BB 140, BB 141, BB 240, and BB 241.

Second-semester research with junior standing, including training in the use of research literature. Application through the BMB Program. Students conduct research under supervision of a faculty mentor. Students expected to attend group meetings and take a lead and make creative contributions to projects. Minimum 12 hours/week in labwork and data analysis.

Hub Units: Creativity/Innovation, Research and Information Literacy

CAS BB 352: JUNIOR RESEARCH IN BMB 3 (4 CREDITS)

Prereq: junior standing, First Year Writing Seminar (e.g., WR 100 or WR 120), major GPA of at least 3.0, junior standing and either BB 341 or BB 351.

Third-semester research with junior standing, including required participation in group meetings. Application through the BMB Program. Students conduct research under supervision of a faculty mentor. Students expected to take a lead and make creative contributions to projects. Attendance at group meetings and final report required. Minimum 12 hours/week in lab or fieldwork, data analysis, and writing.

Hub Units: Writing- Intensive Course, Creativity/Innovation

CAS BB 450: SENIOR RESEARCH IN BMB 1

Prereq: senior standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

First semester senior research including the use of research literature and active participation at group meetings. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance with oral presentations at group meetings required.

Hub Units: Research and Information Literacy and Oral/Signed Communication

CAS BB 451: SENIOR RESEARCH IN BMB 2

Prereq: major GPA of at least 3.0, senior standing, and either BB 340, BB 350, full-time summer UROP, or any 4 credits of BB 140, BB 141, BB 240, and BB 241.

Second-semester research with senior standing, including the use of the research literature. Application through the BMB Program. Students conduct research under supervision of a faculty mentor. Students expected to attend group meetings and take a lead and make creative contributions to projects. Minimum 12 hours/week in labwork and data analysis.

Hub Units: Creativity/Innovation, Research and Information Literacy

CAS BB 452: SENIOR RESEARCH IN BMB 3

Prereq: senior standing, (BB 341 or BB 351 or BB 451 or equivalent), GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

Third semester senior research including the use of research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required. Students expected to take a lead and make creative contributions to projects.

Hub Units: Writing-Intensive and Creativity/Innovation

CAS BB 453: SENIOR RESEARCH IN BMB 4

Prereq: senior standing, (BB 352 or BB 452 or equivalent), GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

Coreq: CAS BB 497 or BB 498

Fourth semester senior research including the use of research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required.

RESEARCH & READINGS

HONORS RESEARCH IN BMB

Honors Research in BMB offers students the ability to participate in two semesters of mentored 4-credit research (CAS BB 401 and 402) and 1-credit research seminars (CAS BB 497 and 498). Students also write and defend an honors thesis on their research. For more information on research requirements and to apply, visit www.bu.edu/bmb/research. Time commitment is a minimum of 12 hours a week, not including preparation and evaluation.

CAS BB 401: HONORS RESEARCH IN BMB 1

Prereq: senior standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.5, consent of instructor (faculty research mentor/sponsor), and approval of application by the BMB Research and Honors Committee.

Coreq: CAS BB 497

First semester of Honors-level undergraduate research in BMB. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. A minimum grade of B+ in this course and in BB 497/498 and BB 401/402 is required to graduate with Honors in BMB. Students must also present a research talk at the BMB symposium at the end of the spring semester of the academic year. Students will conduct mentored laboratory research with a faculty member of the BMB Program leading to graduation with Honors in BMB. Application through the BMB Program including use of research literature and active participation at group meetings. Oral presentations at group meetings required.

Hub Units: Research and Information Literacy, Writing-Intensive, and Creativity/Innovation

CAS BB 402: HONORS RESEARCH IN BMB 2

Prereq: First Year Writing Seminar (e.g., WR 100 or WR 120), senior standing, overall and BMB GPA of at least 3.5, and approval of application by the BMB Research and Honors Committee.

Coreq: CAS BB 498

Second semester of independent laboratory research under the supervision of a faculty member in a two-semester course. Overall course grade is determined by laboratory performance, oral presentation, written thesis, and defense of the thesis before a committee of three BMB faculty members. Successful completion of both CAS BB 401 and BB 402, with a minimum grade of B+, is required to graduate with honors in the major. Students must also present a research talk at the BMB symposium at the end of the Spring semester of the academic year.

Hub Units: Writing-Intensive Course, Creativity/Innovation, Research and Information Literacy

CAS BB 498: HONORS RESEARCH IN BMB SEMINAR 2

Co-requisite for students taking CAS BB 402.

[1 cr] A one-credit continuation of BB 497 for students enrolled in Honors Research in BMB, CAS BB 402, in the spring. Students learn and present digitally produced descriptions of their research and prepare their theses for defense under the guidance of the Research and Honors Committee and present at the BMB Symposium at the end of the semester. A minimum grade of B+ in BB 497/498 and in BB 401/402 is required to graduate with Honors in BMB.

Hub Units: Digital/Multimedia Expression

GRADUATE RESEARCH IN BMB

Graduate Research in BMB is offered as part of the BA/MA program. This dual-degree program is only open to BMB majors and earns students a Bachelor's degree in BMB and a Master's degree in Biotechnology. For more information on the BA/MA program, visit www.bu.edu/bmb/bama-bulletin.

CAS BB 592: GRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

Prereq: admission to the combined BA/MA Biotechnology Program.

Continuation of the laboratory research project initiated in CAS BB 591, under supervision of a faculty member. Externships are acceptable if approved and overseen by a BMB faculty member or the BMB Director. Minimum of 15 hours per week in the lab, culminating in a presentation at the BMB symposium.

Hub Units: Digital/Multimedia Expression, Creativity/Innovation

A list of courses accepted toward the BMB major can be found in the Bulletin at:
www.bu.edu/bmb/bulletin

CAS

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