

# FALL 2024 BIOLOGY COURSE DIRECTORY

## **For advising you will need:**

Degree Advice Report, Classes link on the Student Link, Advising Worksheet, & Course Directory

## **COURSE NOTES:**

### **Courses fulfilling breadth requirements:**

#### **Cell & Molecular (CM)**

CAS BI 203 Cell Biology  
CAS BI 213 Intensive Cell Biology  
CAS BI 218 Cell Biology with ISE 2 Lab

#### **Ecology, Behavior & Evolution (EBE)**

CAS BI 225 Behavioral Biology  
CAS BI 306 Biology of Global Change  
CAS BI 309 Evolution  
CAS BI 407 Animal Behavior

#### **Physiology & Neurobiology (PN)**

CAS BI 310 Human Structure & Function  
CAS BI 315 Systems Physiology  
CAS BI 325 Principles of Neuroscience

### **Upper Level Lab Courses Offered Fall 2023:**

CAS NE 203 Principles of Neuroscience  
CAS BI 218 Cell Biology with ISE 2 Lab  
CAS BI 305 Plant Biology  
CAS BI 306 Biology of Global Change  
CAS BI 310 Human Structure & Function  
CAS BI 311 General Microbiology  
CAS BI 315 Systems Physiology  
CAS/BI 407 Animal Behavior  
CAS BI/CH 421 Biochemistry 1  
CAS BI 513 Genetics Laboratory  
CAS BI515 Population Genetics  
CAS BI 527 Biochemistry Lab 1  
CAS BI 561 Proteostasis in the Biology of Neurodegenerative Disease  
CAS BI Undergraduate Research Courses (first 4-credit semester)

## **REGISTRATION NOTES:**

- **Permission required courses:** Students may not register for these courses on their own, but may need the instructor to sign an [Add/Drop form](#) which the student would take to CAS Advising or the Registrar. If the course has a waitlist form, students should fill that out instead of contacting the professor about a spot. If the course is a research course, students should follow the instructions for submitting an application for research for credit on the corresponding department's website.
- **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 from CAS.
- The following courses **do not count** toward the Biology or BMB major or minor:
  - CAS BI 105 Introductory Biology for Health Sciences
  - CAS BI 211 Human Physiology
  - CAS BI 527 (unless both sections of BI 527 & 528 are taken)
  - CAS BI 581 (unless two sections of BI 581 & 582 are taken)
  - CAS BI Readings or Research Courses (2-credit option)

## CAS BI 105: INTRODUCTORY BIOLOGY FOR HEALTH SCIENCES

*Prereq: High school biology and chemistry are assumed*

**Not for Biology or BMB major/minor credit.** Principles of biology; emphasis on cellular structure, genetics, microbiology, development, biochemistry, metabolism, and immunology. This course is appropriate for non-majors and students in the health and paramedical sciences (Sargent College). Students may not receive credit for BI 105 if BI 108 has already been passed. Carries natural science divisional credit (with lab) in CAS.

### Lecture

A1 Hartmann Mon, Wed, Fri 9:05am - 9:55am

### Lab

C1 Tue 1:30pm - 3:15pm  
C2 Tue 3:30pm - 5:15pm  
D1 Wed 10:10am - 11:55am  
D2 Wed 12:20pm - 2:05pm  
D3 Wed 2:30pm - 4:15pm  
E1 Thu 1:30pm - 3:15pm

**Notes: Not for Biology or BMB major or minor credit** (BI 108 is recommended instead).

**Textbooks & Technology:** TBA

**Grading:** Six lecture quizzes (48%), Lecture participation and homework (17%), Lab assignments (35%)

**Hub Units:** Scientific Inquiry I, Quantitative Reasoning I, Research and Information Literacy

## CAS BI 107: BIOLOGY 1

*Prereq: High school biology assumed*

The evolution and diversity of life; principles of ecology; behavioral biology. For students who plan to major in the natural sciences or environmental science, and for premedical students. Required for biology majors.

### Lecture

A1 Spilios, Strickland Mon, Wed, Fri 10:10am - 11:00am  
A2 Spilios, Strickland Mon, Wed, Fri 12:20pm - 1:10pm

### Lab

B1 Mon 2:30pm - 5:15pm D5 Wed 2:30pm - 5:15pm  
B2 Mon 2:30pm - 5:15pm D6 Wed 2:30pm - 5:15pm  
B3 Mon 2:30pm - 5:15pm D7 Wed 6:30pm - 9:15pm  
C0 Tue 8:00am - 10:45am D8 Wed 6:30pm - 9:15pm  
C1 Tue 8:00am - 10:45am D9 Wed 6:00pm - 8:45pm  
C2 Tue 8:00am - 10:45am E1 Thu 8:00am - 10:45am  
C3 Tue 12:30pm - 3:15pm E2 Thu 8:00am - 10:45am  
C4 Tue 12:30pm - 3:15pm E4 Thu 12:30pm - 3:15pm  
C5 Tue 12:30pm - 3:15pm E5 Thu 12:30pm - 3:15pm  
C6 Tue 3:30pm - 6:15pm E6 Thu 12:30pm - 3:15pm  
C7 Tue 3:30pm - 6:15pm E7 Thu 6:30pm - 9:15pm  
C9 Tue 6:30pm - 9:15pm E8 Thu 6:30pm - 9:15pm  
D1 Wed 8:00am - 10:45am E9 Thu 6:30pm - 9:15pm  
D2 Wed 6:30pm - 9:15pm F1 Fri 8:00am - 10:45am  
D4 Wed 2:30pm - 5:15pm F2 Fri 8:00am - 10:45am

**Textbooks & Technology:** Hillis et al, Principles of Life, 3rd ed, Sinauer, 2019; ExamSoft Account; lab manual

**Grading:** Periodic lecture assessments, and lab assignments

**Hub Units:** Scientific Inquiry I, Quantitative Reasoning I, Critical Thinking, Research and Information Literacy

## CAS BI 203: CELL BIOLOGY

*Prereq: (CAS BI 108 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.

### Lecture

A1	Beffert	Tue, Thu	9:30am - 10:45am
		Mon	6:30pm - 8:00pm *
A2	Beffert	Tue, Thu	3:30pm - 4:45pm
		Mon	6:30pm - 8:00pm *

\* These time slots are reserved for exams.

### Discussion

B2	Mon	11:15am - 12:05pm	D4	Wed	8:00am - 8:50am
B3	Mon	12:20pm - 1:10pm	D5	Wed	2:30pm - 3:20pm
B4	Mon	1:25pm - 2:15pm	E1	Thu	11:15am - 12:05pm
B5	Mon	12:20pm - 1:10pm	E2	Thu	11:15am - 12:05pm
B6	Mon	1:25pm - 2:15pm	F1	Fri	11:15am - 12:05pm
B7	Mon	11:15am - 12:05pm	F2	Fri	1:25pm - 2:15pm
B8	Mon	3:35pm - 4:25pm			
C1	Tue	11:15am - 12:05pm			
C2	Tue	11:15am - 12:05pm			
D1	Wed	11:15am - 12:05pm			
D2	Wed	12:20pm - 1:10pm			
D3	Wed	1:25pm - 2:15pm			
E2	TH	11:15am - 12:05pm			

**Notes:** Class meets with BI 218. Students may receive credit for CAS BI 203 or 213, but not both courses.

**Textbook & Technology:** *The Cell, A Molecular Approach, 9th edition, by Cooper and Adams. Oxford University Press, 2022* – made available through BlackBoard and the First-Day program; active TopHat account

**Grading:** Best three of four lecture examinations (45%), homework (30%), in-class questions (7.5%), discussion (2.5%), and one final examination (15%)

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

## CAS BI 211: HUMAN PHYSIOLOGY

*Prereq: (CASBI105 OR CASBI108) & (CASBI106 OR CASBI210)*

**Not for Biology or BMB major/minor credit.** Intro. to principles of systemic mammalian physiology with special reference to humans.

### Lecture

A1	Co	Mon, Wed, Fri	1:25pm - 2:15pm
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### Lab

B1	Mon	2:30pm - 5:15pm	D3	Wed	6:30pm - 9:15pm
B2	Mon	6:30pm - 9:15pm	E1	Thu	12:30pm - 3:15pm
C1	Tue	12:30pm - 3:15pm			
C2	Tue	6:00pm - 8:45pm			
D1	Wed	8:00am - 10:45am			
D2	Wed	2:30pm - 5:15pm			

**Notes: Not for Biology or BMB major/minor credit** (BI 315 is recommended for major credit instead).

**Textbooks & Technology:** Co, Anatomy and Physiology 1e; Top Hat Pro Account and lab manual.

**Grading:** 65% lecture; 5% teamwork; 30% lab.

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

## CAS BI 213: INTENSIVE CELL BIOLOGY

*Prereq: CAS BI 108 and CAS CH 102 or equivalent*  
*Coreq: CAS CH 203 or equivalent*

Recommended for students in BMB and the specialization in Cell Biology, Molecular Biology & Genetics. Alternative to CAS BI 203 emphasizing experimental approaches and in-depth discussion. Molecular basis of cell biology, including genomics, subcellular organelles, cell signaling, stem cells, and cancer.

### Lecture

A1	Naya	Tue, Thu	9:30am - 10:45am
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### Discussion

B1	Mon	12:20pm - 1:10pm	B3	Mon	4:40pm - 5:30pm
B2	Mon	1:25pm - 2:15pm	B4	Wed	12:20pm - 1:10pm

**Notes:** This course meets with CAS BI 218. Students may receive credit for CAS BI 213 or 203, but not both courses.

**Textbook & Technology:** Cooper, *The Cell: A Molecular Approach*, 8th ed, Oxford University Press, 2019

**Grading:** Two midterms, final exam, and discussion

**Hub Units:** Scientific Inquiry 1, Quantitative Reasoning 1, Research & Information Literacy

## CAS BI 218: CELL BIOLOGY WITH INTEGRATED SCIENCE EXPERIENCE 2 LAB

*Prereq:* CAS BI 116 and CAS CH 116 (or equivalent) or consent of instructor.

*Coreq:* CAS CH 218.

[5 cr] Integration of cell biology with organic chemistry and neuroscience, with emphasis on how each discipline interacts experimentally. Laboratory focuses on synthesizing compounds and testing in biological systems.

### Lecture

A1	Beffert	Tue, Thu	9:30am - 10:45am
		Mon	6:30pm - 8:00pm

*Meets with BI 203 A1. Monday evening timeslot reserved for exams.*

A1	Beffert	Tue, Thu	3:30pm - 4:45am
		Mon	6:30pm - 8:00pm

*Meets with BI 203 A2. Monday evening timeslot reserved for exams.*

A3	Naya	Tue, Thu	9:30am -10:45am
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*Meets with BI 213.*

### Discussion

B1	Register for a BI 203 or 213 discussion.		
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### Lab

L1	Bushell	Wed.	1:25-5:25pm
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### Prelab

P1	Bushell	Mon	2:30pm - 4:15pm
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**Textbooks & Technology:** Cooper, *The Cell: A Molecular Approach*, 8th ed, Oxford University Press, 2019

**Grading:** Lecture (75%) and laboratory (25%). Also see the BI 203 or BI 213 grading section.

**Hub Units:** Scientific Inquiry 2, Quantitative Reasoning 2, Teamwork/ Collaboration, Writing-Intensive

## CAS BI 225: BEHAVIORAL BIOLOGY

*Prereq:* CAS BI 107, CAS BI 108 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. Topics include behavioral adaptation, behavior and conservation, nerve cells, circuits, neuromodulators, and behavior, behavioral genetics and genomics, sociogenomics, the development of behavior, hormones and behavior, communication, sexual selection and reproductive behavior, cooperation and altruism, socioecology, social evolution and culture. Emphasis on the interdisciplinary analysis of behavior. Integrated lectures, discussions, and class exercises.

### Lecture

A1	Traniello/Muscedere	Tue, Thu	2:00pm - 3:15pm
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### Discussion

B1	Traniello/Muscedere	Thu	3:35pm - 4:25pm
B2	Traniello/Muscedere	Fri	9:05am - 9:55am

**Textbooks & Technology:** Behavioral Biology; Alcock, *Animal Behavior* (edition TBA).

**Grading:** 3 quizzes, research paper and class presentation, research article analysis and discussion; engagement and participation.

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

## CAS BI 305: PLANT BIOLOGY

*Prereq:* (CAS BI107 and CAS BI108)

An introduction to the plant sciences, including plant structure and diversity; reproduction, growth, and development; and economic and medicinal uses. Emphasis on new developments in the plant sciences. Three hours lecture, three hours lab.

### Lecture

A1	Primack	Tue, Thu	9:30am - 10:45am
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### Lab

B1	Primack	Mon	2:30pm - 5:15pm
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**Textbooks & Technology:** TBA

**Grading:** TBA

## CAS BI 306: BIOLOGY OF GLOBAL CHANGE

*Prereq: CAS BI 107; Recommended: CAS 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.

### Lecture

A1 Templer Tue, Thu 11:00am - 12:15pm

### Lab

B1	Tue	12:30pm - 3:15pm	C2	Wed	2:30pm - 5:15pm
C1	Wed	8:00am - 10:45am	D1	Thu	12:30pm - 3:15pm
			E1	Fri	11:15am - 2:00pm

**Textbooks & Technology:** Wright, *Environmental Science: Toward a Sustainable Future*, 12th ed., Pearson, 2013

**Grading:** Two midterms (total of 40%), final examination (20%), and laboratory (included paper and presentation) (40%)

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

## CAS BI 309: EVOLUTION

*Prereq: CAS BI 107 and CAS 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.

### Lecture

A1 Mullen Mon, Wed, Fri 10:10am - 11:00am

### Discussion

B1	Wed	12:20pm - 1:10pm	B3	Thu	11:15am - 12:05pm
B2	Wed	1:25pm - 2:15pm	B4	Thu	3:35pm - 4:25pm

**Textbooks & Technology:** Herron and Freeman, *Evolutionary Analysis*, 5th ed., Pearson, 2013

**Grading:** 2 midterms (50%), final (25%), and discussion (25%)

**Hub Units:** Ethical Reasoning

## CAS BI 310: HUMAN STRUCTURE & FUNCTION

*Prereq: CAS BI 108 and CAS BI 203*

Examines the cells and tissues that make up our organs (histology), the structure and interactions of the organ systems (anatomy), and how disease reshapes our bodies (pathology). As a secondary focus, this course also studies and critiques educational media related to human anatomy, and builds introductory competency in health communication.

### Lecture

A1 Co Mon, Wed, Fri 11:15am - 12:05pm

### Lab

B1	Tue	12:30pm - 3:15pm
B2	Tue	3:30pm - 6:15pm

**Textbooks & Technology:** Co, *Anatomy and Physiology 1e*; Visible Body Virtual Dissection App

**Grading:** Four lecture exams (45%), multi-part media project (15%), lecture assignments and homework (10%), laboratory exercises and exams (30%)

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



## CAS BI 311: GENERAL MICROBIOLOGY

*Prereq: CAS BI 203 and CAS BI 206 or equivalent or consent of the instructor and WR 120 or equivalent.*

Organisms discussed include bacteria, archaea, viruses, fungi, protists, and algae. Course will cover microbial diversity, the environmental and human micro biomes, and technologies used to study microbes today. Global issues of emerging infectious disease, agriculture and microbial responses to global change are discussed.

### Lecture

A1 Bhatnagar Mon, Wed, Fri 10:10am - 11:00am

### Lab

B1 Mon, Wed 12:20pm - 2:05pm  
B2 Mon, Wed 2:30pm - 4:15pm  
B3 Tue, Thu 9:00am - 10:45am  
B4 Tue, Thu 1:30pm - 3:15pm  
B5 Tue, Thu 3:30pm - 5:15pm  
B6 Mon, Wed 10:10am - 11:55am  
B7 Mon, Wed 4:30pm - 6:15pm

**Textbooks & Technology:** Slonczewski and Foster, *Microbiology: An Evolving Science*, 4th ed., W.W. Norton & Company, Inc., 2017

**Grading:** Exams (21%), wiki assignment (13%), lab assignments (45%), participation (5%), and final exam (13%)

**Hub Units:** Scientific Inquiry 2, Writing-Intensive, Teamwork/ Collaboration

## 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.

### Lecture

A1 Muscedere Mon, Wed, Fri 11:15am - 12:05pm

### Lab

B1 Mon 2:30pm - 5:15pm D3 Wed 6:30pm - 9:15pm  
B2 Mon 6:30pm - 9:15pm E1 Thu 8:00am - 10:45am  
C1 Tue 8:00am - 10:45am E2 Thu 12:30pm - 3:15pm  
C2 Tue 12:30pm - 3:15pm E3 Thu 6:30pm - 9:15pm  
C3 Tue 6:30pm - 9:15pm F1 Fri 8:00am - 10:45am  
D1 Wed 8:00am - 10:45am F2 Fri 8:00am - 10:45am  
D2 Wed 2:30pm - 5:15pm

**Textbooks & Technology:** Widmaier et al., *Vander's Human Physiology: The Mechanisms of Body Function*, 15th ed., McGraw-Hill Education, 2013; Top Hat Pro account and lab manual

**Grading:** Lecture (60%: 4 exams, small assignments); Lab (40%, 4 writing assignments, teamwork assignments)

**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.

### Lecture

A1 Gavornik Tue, Thu 12:30pm - 1:45pm

### Discussion

B1	Wed	12:20pm - 1:10pm	B5	Fri	11:15am - 12:05pm
B2	Wed	1:25pm - 2:15pm	B6	Fri	12:20pm - 1:10pm
B3	Fri	9:05am - 9:55am	B7	Wed	9:05am - 9:55am
B4	Fri	10:10am - 11:00am	B8	Wed	3:35pm - 4:25pm

**Textbooks & Technology:** Bear, Connor, and Paradiso, *Neuroscience: Exploring the Brain*, 4th ed., Lippincott Williams & Wilkins, 2015. ExamSoft account

**Grading:** Texts, quizzes, and participation

**Hub Units:** Scientific Inquiry 2, Critical Thinking

## CAS BI 407: ANIMAL BEHAVIOR

*Prereq: CAS BI 107.*

The science of ethology on a hormonal, neural, and evolutionary level. Special emphasis will be on significance and adaptiveness of an expressed behavior. Individual lab projects as well as some prepared labs may require more than the scheduled time. BI 407 and BI 225 cannot be taken concurrently.

### Lecture

A1 Wasserman Tue, Thu 3:30pm - 4:45pm

### Lab

B1 Mon 2:30pm - 5:15pm  
E1 Thu 8:00am - 10:45am  
F1 Fri 2:30pm - 5:15pm

**Notes:** Meets with BI 607.

**Textbooks & Technology:** None

**Grading:** 3 Lecture exams (66%) and lab (34%)

**Hub Units:** Philosophical Inquiry & Life's Meanings, Ethical Reasoning, Research & Information Literacy

## CAS BI 408: INSECT BIOLOGY

*Prereq: (CASBI107 & CASBI108) CAS BI 303 is recommended.*

Course explores the biology of insects, focusing on insect diversity and complexity. Lectures will focus on various aspects of insect biology, including development, physiology, behavior, ecology and evolution. Lab will focus on insect diversity.

### Lecture

A1 Casasa Velez MWF 10:10am - 11:00am

### Lab

A1 Mon 2:30pm - 5:15pm

**Textbooks & Technology:** TBA

**Grading:** TBA

## CAS BI 410: DEVELOPMENTAL BIOLOGY

*Prereq: CAS BI 203 or BI 213 or BI 218 or consent of the instructor.*

Contemporary aspects of embryonic development are covered, drawing from current literature. There is an emphasis on the use of experimental approaches to address topics such as polarity in the egg, body axis specification, embryonic patterning, and organogenesis.

### Lecture

A1 Bradham Tue, Thu 2:00pm - 3:15pm

### Discussion

B1 Wed 1:25pm - 2:15pm  
B2 Wed 2:30pm - 3:20pm  
B3 Wed 12:20pm - 1:10pm

**Notes:** Meets with GRS BI 610

**Textbooks & Technology:** Gilbert, *Developmental Biology*, 10th ed., Sinauer, 2013

**Grading:** Three exams plus discussion grade

## CAS BB 421: BIOCHEMISTRY 1

*Prereq: CAS CH 204 or CAS CH 212 or CAS CH 214 or equivalent*

Introductory biochemistry. The following topics are covered: protein structure and folding enzyme mechanisms, kinetics, and allostery; nucleic acid structure; lipids and membrane structure; bioenergetics; vitamins and coenzymes. See BB 527 for lab content.

### Lecture

A1	Tolan	Mon	8:00am - 9:55am
		Wed, Fri	9:05am - 9:55am
A2	Liu	Tue, Thu	2:00pm - 3:15pm

### Lab

B1	Wed	8:00am - 12:00pm	B7	Fri	8:00am - 12:00pm
B2	Wed	1:25pm - 5:25pm	B8	Fri	1:25pm - 5:25pm
B3	Wed	6:30pm - 10:30pm	B9	Fri	6:30pm - 10:30pm
B4	Thu	8:00am - 12:00pm	BA	Mon	10:10am - 2:10pm
B5	Thu	1:25pm - 5:25pm	BB	Mon	3:35pm - 7:35pm
B6	Thu	6:30pm - 10:30pm	BC	Tue	3:35pm - 7:35pm

### Discussion

C1	Tue	12:30pm - 1:45pm
C2	Tue	2:00pm - 3:15pm

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

**Textbooks & Technology:** Lehninger, *Principles of Biochemistry*, 8th ed., Nelson and Cox, Achive Website, and Tolan + Medrano Labbook 5th ed, 2020

**Grading:** Exams (65%), and lab (35%)

**Hub Units:** Quantitative Reasoning 2, Critical Thinking, Teamwork/ Collaboration

## CAS BI 443: TERRESTRIAL BIOGEOCHEMISTRY

*Prereq: CAS BI 107 or CAS ES 105 and CH 101/102, or consent of instructor*

The patterns and processes controlling carbon and nutrient cycling in terrestrial ecosystems. Links between local and global scales are emphasized. Topics include net primary production, nutrient use efficiency, and biogeochemical transformation.

### Independent

A1	TBD	Mon, Wed, Fri	11:15am - 12:05pm
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**Textbooks & Technology:** TBA

**Grading:** TBA

**Notes:** Meets with BI 643

## CAS BI 445: CELLULAR AND MOLECULAR NEUROPHYSIOLOGY

*Prereq: CAS BI 203 or CAS BI 315 or BI 325 or CAS NE 203 or consent of instructor.*

This course examines two fundamental building blocks of brain function, voltage-gated ion channels and synaptic transmission. We first discuss basic properties of ion channels, namely their molecular structures and kinetics. We next consider how ion channels shape firing patterns in neurons of mammalian CNS and how firing patterns can be modulated through subtle variations in ion channel compositions. Second, we consider basic molecular processes underlying synaptic transmission. Based on the understanding of neuronal firing patterns and synaptic transmission, we then explore how these basic properties shape neuronal communication at network level. We discuss examples where complex network functions such as brain waves, attention, consciousness and auditory processing can be traced to, and explained by, basic properties of ion channels or synaptic functions. In the laboratory, we perform extracellular and intracellular recordings from motor axons and muscle fibers of crayfish, which allow us to observe how action potentials pair up with synaptic potentials in real time. The whole class will perform a project over the course of a semester with the expectation that, collectively, the data should be of sufficient quantity and quality for a publication. Some class projects in the past had led to publications on effects of pesticides and on drugs treating epilepsy. In the coming semesters, we plan to examine the same nerve-muscle preparation of a parthenogenetic crayfish (marble crayfish). These animals are all females and are genetic clones of each other. We will start by examining electrophysiological and morphological properties of nerve-muscle preparation since no previous studies has been perform in this species, which is believed to appear through a mutation recently (1997). Furthermore, the genome of marble crayfish had been sequenced, which may be a valuable resource for molecular pharmacological studies of ion channels.

### Lecture

A1	Lin	Tue, Thu	2:00pm - 3:15pm
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### Lab

D1	Mon	2:30pm - 6:15pm
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**Notes:** Meets with NE 445 and BI 645

**Textbooks & Technology:** Purves et al., *Neuroscience*, 4th or 5th ed., Sinauer Associates

**Grading:** Midterm 1 (15%), midterm 2 (25%), final (25%), lab reports, presentations, and participation (35%: 15% oral, 20% written)



## CAS BI 448: CONSERVATION BIOLOGY

*Prereq: CASBI303 OR CASBI306 or consent of instructor.*

The study of biological diversity and modern methods to protect endangered plant and animal species. The environment, population, and genetic and human factors that affect the survival of species are examined for temperate and tropical communities, as well as terrestrial and aquatic habitats. Three hours lecture, one hour discussion. Effective Fall 2020, this course fulfills a single unit in each of the following BU Hub areas: Oral and/or Signed Communication, Ethical Reasoning.

### Lecture

A1 Primack Mon, Wed, Fri 1:25pm - 2:15pm

### Discussion

A1 Primack Wed 2:30pm - 3:20pm

**Textbooks & Technology:** TBA

**Grading:** TBA

**Notes:** Meets with BI 643

## CAS BI 455: DEVELOPMENTAL NEUROBIOLOGY

*Prereq: CAS BI 203 or CAS BI 325 or CAS NE 203 or consent of instructor*

This course will introduce current theories regarding the formation of the nervous system. Emphasis will be placed on the cellular and molecular mechanisms underlying events including neuronal determination, neurogenesis, patterning, axonal growth and guidance, polarity, synaptogenesis, synaptic modification, and cell death.

### Lecture and Discussion

A1 Man Wed 10:10am - 11:55am  
Fri\* 10:10am - 11:55am

\*Also includes paper presentation

**Notes:** Meets with CAS NE 455 and GRS BI 655.

**Textbooks & Technology:** (Recommended) Sanes, Reh, and Harris, *Development of the Nervous System*, 3rd ed., Academic Press, 2011; (Optional) Rao and Jacobson, *Developmental Neurobiology*, 4th ed., Springer, 2005.

**Grading:** One midterm and one final exam.

## CAS BI 481: MOLECULAR BIOLOGY OF THE NEURON

*Prereq: BI 325 (preferred) or 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 of sensory transduction.

### Independent

A1 Ho Mon, Wed 2:30pm - 4:15pm

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

**Textbooks & Technology:** none

**Grading:** 2 midterms, 1 final exam, and discussion.

**Course Delivery:** LfA

## CAS BI 503: NEUROIMMUNOLOGY

*Prereq: CAS BI 203/NE 102 or CAS BI 213 and BI 325/NE 203*

Neuroimmunology is a burgeoning field in neuroscience. This course examines current topics including the role of glia in brain development, health, and disease, glia-neuron crosstalk, impact of stress and environment on the neuroimmune system, and cell trafficking into the brain.

A1 Tay Tue, Thu 9:00am - 10:45am

**Notes:** Meets with NE 503.

**Textbooks & Technology:** Primary literature will be provided on the Blackboard site. In-class use of laptops with Wi-Fi access.

**Grading:** Written assignments, experiments, presentations, debates, and final group project using digital multimedia.

**Hub Units:** TBA

## CAS BI 510: INSTITUTIONAL RACISM IN HEALTH AND SCIENCE

*Prereq: CAS BI 126 or CAS 206/216 or ENG BE 209 and senior standing, or consent of instructor.*

Historically, pseudoscientific theories have provided the justification for establishing and maintaining racial hierarchies, which resulted in centuries of dehumanizing and unethical practices meted out to Blacks, Indigenous, and People of Color (BIPOC). Unfortunately, many of these pernicious ideas persist, such that they hinder BIPOC's opportunities in Science and exacerbate their health outcomes. This course traces the historical roots (e.g. mischaracterization of race as a biological construct) and physiological manifestations of racism in science, and examines harmful consequences on victims' health outcomes.

### **Independent**

A1 Osborne Mon, Wed, Fri 2:30pm - 3:20pm

**Notes:** Meets with ENG BF 510.

**Textbooks & Technology:** *Superior: The Return of Race Science* by Angela Saini ISBN-13 978-0-8070-2842-1; Assigned papers

**Grading:** Writing assignments/homework, discussion, capstone project

## CAS BI 513: GENETICS LAB

*Prereq: CAS BI 203 and CAS BI 206, senior standing, and consent of instructor.*

Genetic techniques such as mutant selection and screening, complementation, mapping, recombinant DNA, and targeted mutagenesis are taught using the genetic model systems *Escherichia coli*, *Saccharomyces cerevisiae*, and *Arabidopsis thaliana*. Short-term and long-term projects in which students formulate and test hypotheses.

### **Lab**

A1 Celenza Tue, Thu 12:30pm - 3:15pm

A2 Celenza Tue, Thu 4:15pm - 7:00pm

**Notes:** To register for BI 513, please use this for the 2024 sign up link: <https://forms.gle/QvUTHBko9eTVhWg6>

**Textbooks & Technology:** Class notes and assigned papers.

**Grading:** Lab reports, homework, notebook and attendance.

## CAS BI 515: POPULATION GENETICS

*Prereq: (CASBI206 OR CASBI309) and (CAS MA 121/123 or CAS MA 115/213) or consent of instructor.*

Examines evolutionary processes that give rise to genetic variation in populations, such as mutation, drift, and selection. Covers theoretical basis of population genetics including genetic drift, natural selection, coalescence and neutral theory, along with introduction to analysis of population genomic data.

### **Lecture**

A1 Sorenson Mon, Wed, Fri 3:35pm - 4:25pm

### **Discussion**

B1 Sorenson Wed 2:30pm - 3:20pm

**Textbooks & Technology:** TBA

**Grading:** TBA

## CAS BI 520: SENSORY NEUROBIOLOGY

*Prereq: (CASBI325 OR CASNE203) or consent of instructor.*

A broad survey of sensory system function in both model and non-model organisms, focusing on fundamental principles of sensory transduction and processing. This class focuses mainly on the senses that are not covered heavily in introductory neuroscience classes, including taste, touch, olfaction, and specialized non-human senses such as echolocation. Vision is not a central focus. Students will learn to read and discuss primary literature. Also offered as CAS NE 520.

### **Lecture**

A1 Younger Tue, Thu 11:00am - 12:15pm

### **Discussion**

B1 Wed 4:40pm - 5:30pm

**Textbooks & Technology:** TBA

**Grading:** TBA

## CAS BB W: BIOCHEMISTRY LAB 1

*Prereq: (CAS CH 204 and CAS CH 212 and CAS CH 214) or CAS CH 282.*

**[2 cr] Not for Biology major or minor credit unless both BI 527 and BI 528 are taken.** Emphasizes the purification and characterization of proteins and DNA. Development and use of modern instrumentation and techniques.

### **Lecture**

A1	Tolan	Tue	12:30pm - 1:45pm
A2	Tolan	Tue	2:00pm - 3:15pm

### **Lab**

B1	Wed	8:00am - 12:00pm
B2	Wed	1:25pm - 5:25pm
B3	Wed	6:30pm - 10:30pm
B4	Thu	8:00am - 12:00pm
B5	Thu	1:25pm - 5:25pm
B6	Thu	6:30pm - 10:30pm
B7	Fri	8:00am - 12:00pm
B8	Fri	1:25pm - 5:25pm
B9	Fri	6:30pm - 10:30pm
BA	Mon	10:10am - 2:10pm
BB	Mon	3:35pm - 7:35pm
BC	Tue	3:35pm - 7:35pm

**Notes:** Meets with CAS BB 421, CAS BB 621 and MET BB 421. **Not for Biology major or minor credit unless both BI 527 and BI 528 are taken.**

**Textbooks & Technology:** Tolan & Medrano, *Biochemistry Laboratory Manual*, 5th Ed., 2020.

**Grading:** Attendance, pre-lab quizzes, lab notebooks and reports, safety, and participation.

**Hub Units:** Teamwork/Collaboration

## CAS BI 535: TRANSLATIONAL RESEARCH IN ALZHEIMER'S DISEASE

*Prereq: (CAS BI 203 or CAS NE 102) and (CAS BI 325 or CAS NE 203).*

An introduction to translational research focused on Alzheimer's disease, with particular emphasis on the search for new therapeutic targets, from observations of pathogenic phenotypes in patients to the development of appropriate animal and cellular models of the disease.

### **Independent**

A1	Pastorino	Mon, Wed, Fri	1:25pm - 2:15pm
		Wed	2:30pm - 3:20pm

**Notes:** Meets with NE 535.

**Textbooks & Technology:** Powerpoint presentations on research articles will be provided to students the day before class.

**Grading:** Exams (66%), assignments (13%), paper presentation (13%), and participation in class (8%).

**Hub Units:** Ethical Reasoning, Oral/Signed Communication, Research & Information Literacy

## CAS BI 551: BIOLOGY OF STEM CELLS

*Prereq: CAS BI 203 or CAS BI 206 or consent of instructor.*

Views on stem cell research range from assumptions of a potential cure for most diseases to fears that it will depreciate the value of human life. This course equips students with the science that underlies this discussion, including the biological properties of stem cells and the experimental hurdles to its utilization in regenerative medicine.

### Lecture and Discussion

A1	Frydman	Tue, Thu	9:30am - 10:45am
		Thu	11:15am - 12:05pm

**Textbooks & Technology:** Primary literature will be provided on the blackboard site.

**Grading:** Midterm, final, presentation, and participation.

## CAS BI 552: MOLECULAR BIOLOGY 1

*Prereq: (CAS BI 203 or CAS BI 213) and CAS BI 206 or CAS BI 216.*

How cells synthesize biologically important macromolecules (DNA, RNA and proteins), as well as their structure, function and regulation. Both prokaryotic and eukaryotic molecular biology are discussed. Topics include: DNA replication, DNA repair, recombination, prokaryotic transcription, translation, eukaryotic transcription/RNA processing, DNaseI hypersensitive sites, 5-methylcytosine, eukaryotic RNA polymerase structure/CTD modification, eukaryotic promoter structure, general transcription factors, enhancer-promoter loops, histone modification/chromatin remodeling, biomolecular condensates and non-coding RNA. Discussion of important molecular biological techniques such as genetic & recombinant DNA techniques, including CRISPR/Cas9.

### Lecture

A1	Loechler	Tue, Thu	11:00am - 12:15pm
		Thu*	6:30pm - 10:30pm
A2	Loechler	Tue, Thu	3:30pm - 4:45pm
		Thu*	6:30pm - 10:30pm

\*Time reserved for three exams during the semester (probably 9/26, 10/24 & 12/5)

### Discussion

B1	Tue	5:00pm - 5:50pm
B2	Wed	10:10am - 11:00am
B3	Wed	1:25pm - 2:15pm
B4	Wed	2:30pm - 3:20pm
B5	Wed	3:35pm - 4:25pm
B6	Thu	5:00pm - 5:50pm

**Textbooks & Technology:** TBD

**Grading:** 4 exams (75% total), homework (12.5%), and discussion participation (12.5%)

## CAS BI 560: SYSTEMS BIOLOGY

*Prereq: CAS BI 552 or consent of the instructor.*

Examines critical components of systems biology, including design principles of biological systems (e.g., feedback, synergy, cooperativity), and the generation and analysis of large-scale datasets (e.g., protein-protein interaction, mRNA expression).

### **Independent**

A1 Siggers Mon, Wed 2:30pm - 4:15pm

**Textbooks & Technology:** Course readings provided via Blackboard.

**Grading:** Midterm 1, midterm 2 (midterm total 30%), final exam (40%), and class participation (30%).

## CAS BI 561: PROTEOSTASIS IN THE BIOLOGY OF NEURODEGENERATIVE DISEASES

*Prereq: (CASNE102 OR CASBI108) . CAS BI 203 or CAS BI 213 are recommended.*

A hands-on class focusing on the mechanisms that control protein homeostasis, and on the approaches that we can use to study how it may change in conditions associated with neurodegenerative diseases. The class mimics, as much as possible, a real research environment, as students carry out experiments throughout the semester, learn how to develop and test new hypotheses, and also share knowledge through weekly readings and presentation of research articles inherent to the topics of the class. Effective Fall 2021, this course fulfills a single unit in each of the following BU Hub areas: Scientific Inquiry II, Creativity/Innovation, Research and Information Literacy.

### **Independent**

A1 Pastorino Mon, Fri 2:30pm - 6:30pm

**Textbooks & Technology:** TBA

**Grading:** TBA

**Hub Units:** Scientific Inquiry 2, Research and Information Literacy, Creativity/Innovation

## CAS BI 565: FUNCTIONAL GENOMICS

*Prereq: CAS BI 552 or consent from instructor*

Recent years have seen an explosion in the number of organisms for which sequenced genomes are available. However, we are only beginning to understand how the information encoded in the million/billion DNA bases of eukaryotic genomes is organized and how that information is translated into function. Throughout this course, we will start to answer central questions in the molecular biology and functional genomics fields, including: Given that only ~2% of the genome encodes for proteins, what is the function of the rest of the genome? How is it possible that yeast, worms and humans have a similar number of genes? What is the flow of information in the cell that controls gene function and activity? Which experimental approaches allow us to tackle these questions?

### **Independent**

A1 Fuxman Bass Tue, Thu 9:00am - 10:45am

**Textbooks & Technology:** Review articles and research papers on Blackboard

**Grading:** Exam I: 25 %, Exam II: 30 %, Project: 15 %, Assignments: 9%, Participation: 8%, Paper presentation: 8%, Quizzes: 5%.

## CAS BI 566: DNA DYNAMICS IN DISEASE

*Prereq: CAS BI 206 or 216, or approval from instructor*

What goes wrong to cause disease? In this course we will examine diseases caused by problems in basic cellular processes including mitosis, meiosis, and DNA repair. We will focus on past and current research that has led to the understanding of the mechanisms contributing to disease. Content will be delivered through active, engaging lectures where you will analyze data from past and current research papers, and think critically to answer questions. Paper discussion days will include in-depth analysis of one primary literature article that is central to the field and addresses the content of that module. You will display the knowledge and skills learned through participation, problem sets, and exams.

### **Independent**

A1 Hartmann Mon, Wed 10:10am - 11:55am

**Textbooks & Technology:** Primary literature and other materials will be provided.

**Grading:** Three problem sets, Group presentation, Participation



## CAS BI 572: ADVANCED GENETICS

*Prereq: (CASBI206 & CASBI203) CAS BI 552 is recommended.*

An in-depth study of eukaryotic genetics, ranging from the history and basic principles to current topics and modern experimental approaches. Genetics of *Drosophila*, *C. elegans*, mice, and humans are explored in detail, including readings from primary literature. Three hours lecture, one hour discussion. **Effective Fall 2023**, this course fulfills a single unit in each of the following BU Hub areas: Oral and/or Signed Communication, Ethical Reasoning.

### Lecture

A1 McCall Tue, Thu 11:00am - 12:15pm

### Discussion

A1 McCall Wed 12:20pm - 1:10pm

**Textbooks & Technology:** Meneely, *Genetic Analysis: Genes, Genomes, and Networks in Eukaryotes*, 3rd Ed., Oxford University Press, 2020

**Grading:** 2 Midterms (20%), final exam (25%), problem sets (15%), discussion/participation (10%), and final presentation (10%).

## CAS BI 572: ADVANCED GENETICS

*Prereq: (CASBI206 & CASBI203) CAS BI 552 is recommended.*

An in-depth study of eukaryotic genetics, ranging from the history and basic principles to current topics and modern experimental approaches. Genetics of *Drosophila*, *C. elegans*, mice, and humans are explored in detail, including readings from primary literature. Three hours lecture, one hour discussion.

### Lecture

A1 McCall Tue, Thu 11:00am - 12:15pm

### Discussion

A1 McCall Wed 12:20pm - 1:10pm

**Textbooks & Technology:** Meneely, *Genetic Analysis: Genes, Genomes, and Networks in Eukaryotes*, 3rd Ed., Oxford University Press, 2020

**Grading:** 2 Midterms (20%), final exam (25%), problem sets (15%), discussion/participation (10%), and final presentation (10%).

## CAS BI 581 G1: SEMINAR IN BIOLOGY

*Prereq: Consent of instructor*

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.

### Independent

G1 Gilmore Thu 9:00am - 10:45am

**Textbooks & Technology:** TBA

**Grading:** TBA

## CAS BI 589: NEURAL IMPACTS ON TUMORIGENESIS

*Prereq: NE 203 or BI 325*

It has been known for some time that cancer cells leverage the tissue around them in order to allow for the formation and growth of a tumor, and ultimately to aid in its invasion of adjacent tissue and metastasize. Recent studies have shown a novel symbiotic interaction between the peripheral nervous system and tumors using reciprocal cross-talk. Topics of discussion will include neuronal invasion and mechanisms of neurogenesis into solid tumors, cross-talk in tumor microenvironments, nervous system influence on cancer modulators such as stem cells, inflammation and immune surveillance and extracellular signaling events that enhance tumorigenesis with attention paid to potential therapeutic interventions. Finally, we will explore if this nervous system/cancer interface might be a mediator for the effects of stress-induced cancer.

### Independent

A1 Tullai Tue, Thu 12:30pm - 2:15pm

**Notes:** Meets with NE 589.

**Textbooks & Technology:** Primary literature will be provided on the Blackboard site.

**Grading:** Weekly quizzes, individual class presentations and participation in daily literature discussions.

**Hub Units:** Scientific Inquiry 2, Oral/Signed Communication, Research and Information Literacy

# MARINE SEMESTER

**The BU Marine Semester** is a fall semester study abroad program consisting of month-long, research-oriented marine courses, chosen from a set of diverse course offerings. Courses take place on campus in BU's Marine Research Teaching Lab and off campus at field sites in New England and Belize (Central America). For more information, visit [www.bu.edu/biology/ms](http://www.bu.edu/biology/ms). All CAS BI Marine Semester courses count as electives toward the Biology, Behavioral Biology, and Ecology & Conservation Biology majors. All CAS BI Marine Semester courses will also count towards the three upper-level labs required for all Biology and all Specialization majors. The Marine Semester program earns the following Hub units: Scientific Inquiry II, Teamwork/Collaboration, Oral/Signed Communication and Creativity/Innovation.

**Please note:** CAS MR courses offered in the Marine Semester are not accepted as Biology, ECB, or SBB electives. If students submit a [Department Petition](#) well in advance, the CAS MR courses will be reviewed and a decision will be made about whether the courses can count as major electives.

## General Marine Semester Information:

*The following courses for Fall 2024 have not yet been announced. These courses are meant to be an example of what may be offered for the Fall 2024 Marine Semester. Actual courses are subject to change.*

## CAS BI 523: MARINE URBAN ECOLOGY

*Prereq: Acceptance into the Marine Semester.*

Marine Urban Ecology is an emerging, interdisciplinary field that aims to understand how human and ecological processes can coexist in human-dominated systems. Topics, ecosystems, and organisms associated with urbanization in the Greater Boston area.

## CAS BI 531: ICHTHYOLOGY

*Prereq: CAS BI 260 and consent of instructor; acceptance into the Marine Semester.*

A comprehensive introduction to fish biology and systematics. Emphasis on phylogenetic relationships, ecology, and behavior. Labs include morphological studies of specimens and behavioral studies of live fish.

## CAS BI 539: CORAL REEF DYNAMICS

*Prereq: Acceptance into the Marine Semester.*

Tropical reefs-- diverse, complex, and ancient-- exhibit lawful cycles of growth, degradation, and regeneration. Explore these through observations on the Belize Barrier Reef in fossil reef environments and through laboratory experiments. Insights are applied to reef conservation in today's changing world. Also offered as CAS ES 539. This course involves field work in Belize.

## CAS BI 541: CORAL REEF RESTORATION & RESILIENCE

*Prereq: Acceptance into the Marine Semester.*

Caribbean coral reefs have fallen into ruin. Students develop methods to restore reef health by applying natural history and home aquarium skills, genomics, community and landscape ecology, and climatology. This is the clinical (conservation applications) sister course to CAS BI/ES 539 (Coral Reef Dynamics), and includes field work in Belize.

## CAS BI 546: MARINE MEGAFAUNAL ECOLOGY: STELLWAGEN BANK NATIONAL MARINE SANCTUARY AND SURROUNDING WATERS

*Prereq: CAS BI 260 and CAS MA 213 or consent of the instructor; acceptance into the Marine Semester.*

Marine macrofauna: whales, seals, seabirds, fishes, turtles, jellies, and people in Stellwagen Bank National Marine Sanctuary. Evolution, food webs, and distributional ecology; physical and human influences on foraging and movement behavior. Student research builds ecosystem-based science for Sanctuary management.

# MARINE SEMESTER

## CAS BI 548: MARINE MICROBIAL ECOLOGY

*Prereq: Acceptance into the Marine Semester*

Microorganisms are the most abundant form of life in the ocean. Fluorescence in situ hybridization (FISH) is a critical tool that uses sequencing to develop a deeper sense of specific microbe roles in an ecosystem. This project-based course weaves together scientific background, analytical tools, and data processing and analysis. Students gain insight into the complexity and importance of marine microbial communities. With lab-based FISH projects, students design and conduct an adaptive set of experiments. Through computational data analysis, students turn raw data into usable results.

## CAS BI 569: TROPICAL MARINE INVERTEBRATES

*Prereq: CAS BI 107 and CAS BI 260; acceptance into the Marine Semester.*

Explores the diversity of marine invertebrates, including body plans, feeding biology, reproductive strategies, and developmental programs. Field biodiversity surveys and behavioral studies in shallow water tropical marine environments, especially seagrass beds and mangrove. This course involves field work in Belize.

## CAS BI 578: MARINE GEOGRAPHIC INFORMATION SCIENCE

*Prereq: CAS BI 260 and CAS ES 144; CAS MA 213 is strongly recommended; acceptance into the Marine Semester.*

Introduction to marine geographic information systems and spatial analysis for conservation, management, and marine landscape ecology. Comparative examples from Gulf of Maine and tropics. Solve problems in coastal zoning and marine park design, whale and coral reef conservation.

## CAS BI 591: BIO-OPTIC OCEANOGRAPHY

*Prereq: Prereq: ES/EE 144 and CH 101 and CH 102 (or CH 171 and CH 172); MA 121 or MA 123; MA 122 or MA 124 recommended; or consent of instructor, acceptance into the Marine Semester.*

This field- and lab-based course explores how the optically active constituents in seawater affect the in-water light field, and in turn, how field optics and remote sensing can facilitate the study of marine biogeochemistry, biological oceanography and water quality.

## CAS BI 593: MARINE PHYSIOLOGY AND CLIMATE CHANGE

*Prereq: CAS BI 108 or consent of instructor; acceptance into the Marine Semester.*

Explores the range of physiological responses marine organisms exhibit in response to climate change. Investigates phenotypic plasticity exhibited across different organisms and how this plasticity can influence an organism's resilience to its changing environment.

# 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](http://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-credit 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.

**Grading:** Course grade is determined by laboratory/field work performance.

### 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.

**Grading:** Course grade is determined by laboratory/field work performance.

### 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.

**Grading:** Course grade is determined by laboratory/field work performance.

### 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.

**Grading:** Course grade is determined by laboratory/field work performance.

### 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 mentor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings required. This course fulfills a single unit in the following BU Hub area: Research and Information Literacy.

**Grading:** Course grade is determined by laboratory/field work performance.

### 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. Attendance with oral presentations at group meetings required. This course fulfills a single unit in the following BU Hub area: Oral/Signed Communication.

**Grading:** Course grade is determined by laboratory/field work performance.

# 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. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Oral/Signed Communication.

**Grading:** Course grade is determined by laboratory/field work performance.

## 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. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Creativity/Innovation.

**Grading:** Course grade is determined by laboratory/field work performance.

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

*Prereq: junior standing, (BI 341 or BI 351), 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. This course fulfills a single unit in the following BU Hub areas: Writing-Intensive and Creativity/Innovation.

**Grading:** Course grade is determined by laboratory/field work performance.

## 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. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Oral/Signed Communication.

**Grading:** Course grade is determined by laboratory/fieldwork performance.

## 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. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Creativity/Innovation.

**Grading:** Course grade is determined by laboratory/fieldwork performance.

## CAS BI 452: SENIOR RESEARCH IN BIOLOGY 3

*Prereq: senior standing, (BI 341 or BI 351 or BI 451), 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. This course fulfills a single unit in the following BU Hub areas: Writing-Intensive and Creativity/Innovation.

**Grading:** Course grade is determined by laboratory performance.



# RESEARCH & READINGS

## CAS BI 453: SENIOR RESEARCH IN BIOLOGY 4

*Prereq: senior standing, (BI 352 or BI 452), 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.

**Grading:** Course grade is determined by laboratory performance.

## 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](http://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: HONORS RESEARCH IN BIOLOGY 1

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

First semester of Honors-level mentored laboratory or field research with a faculty member of the Biology Department leading to graduation with Honors in Biology. A minimum grade of B+ in this course and in BI 497 or 498 and BI 401/402 is required to graduate with Honors in Biology. Application through the Biology Department including use of research literature and active participation at group meetings. This course fulfills a single unit in the following BU Hub area: Research and Information Literacy and Oral/Signed Communication.

**Grading:** Course grade for both BI 401 and 402 is determined by laboratory performance, oral presentation, written thesis, and defense of the thesis before a committee of three faculty members. Grades for both BI 401 and 402 are determined upon completion of BI 402.

## CAS BI 402: HONORS RESEARCH IN BIOLOGY 2

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

Honors-level mentored laboratory or field research with a faculty member of the Biology Department leading to graduation with Honors in Biology. A minimum grade of B+ in this course and in BI 497 or 498 and BI 402 is required to graduate with Honors in Biology. Application through the Biology Department including use of research literature. Students expected to attend and participate at group meetings and take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Oral/Signed Communication, Writing-Intensive, and Creativity/Innovation.

**Grading:** Course grade for BI 402 is determined by laboratory performance, oral presentation, written thesis, and defense of the thesis before a committee of three faculty members. Grades for both BI 401 and 402 are determined upon completion of BI 402.

## CAS BI 497: HONORS RESEARCH IN BIOLOGY SEMINAR 1

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

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. This course fulfills a single unit in the following BU Hub areas: Digital/Multimedia Expression.

**Grading:** Attendance and participation

## 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 to 15 hours per week in the lab, culminating in submission of a written progress report.

**Grading:** Course grade is determined by laboratory performance.

# 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](http://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-credit research courses can fulfill an elective for BMB majors. Two semesters of senior-level research can fulfill the Advanced Lab Elective for BMB majors but cannot also count towards the 2 BMB electives.*

### 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.

**Grading:** Course grade is determined by laboratory performance

### 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.

**Grading:** Course grade is determined by laboratory performance

### 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 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.

**Grading:** Course grade is determined by laboratory performance

### 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 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.

**Grading:** Course grade is determined by laboratory performance

### 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. This course fulfills a single unit in the following BU Hub area: Research and Information Literacy.

**Grading:** Course grade is determined by laboratory performance

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

*Prereq: junior standing, [BB 340 or BB 350 or 2 semesters of first year (BB 140/141) or sophomore research (BB 240/241) 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 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. This course fulfills a single unit in the following BU Hub area: Research and Information Literacy.

**Grading:** Course grade is determined by laboratory performance

# RESEARCH & READINGS

## CAS BB 350: JUNIOR RESEARCH IN BMB 1 (4 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.*

First semester junior 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. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Oral/Signed Communication.

**Grading:** Course grade is determined by laboratory performance.

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

*Prereq: junior standing, [BB 340 or BB 350 or 2 semesters of first year (BB 140/141) or sophomore research (BB 240/241) 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.*

Second 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. Students expected to attend group meetings and take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Creativity/Innovation.

**Grading:** Course grade is determined by laboratory performance

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

*Prereq: junior standing, (BB 341 or BB 351), 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 junior research including the use of the 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. This course fulfills a single unit in the following BU Hub areas: Writing-Intensive and Creativity/Innovation

**Grading:** Course grade is determined by laboratory performance

## 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. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Oral/Signed Communication.

**Grading:** Course grade is determined by laboratory performance

## CAS BB 451: SENIOR RESEARCH IN BMB 2

*Prereq: senior standing, [BB 340 or BB 350 or BB 450 or 2 semesters of first year (BB 140/141) or sophomore research (BB 240/241) 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.*

Second semester senior research including the use of the 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. Students expected to attend group meetings and take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Creativity/Innovation.

**Grading:** Course grade is determined by laboratory performance

## CAS BB 452: SENIOR RESEARCH IN BMB 3

*Prereq: senior standing, (BB 341 or BB 351 or BB 451), 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. This course fulfills a single unit in the following BU Hub areas: Writing-Intensive and Creativity/Innovation.

**Grading:** Course grade is determined by laboratory performance

# RESEARCH & READINGS

## CAS BB 453: SENIOR RESEARCH IN BMB 4

*Prereq: senior standing, (BB 352 or BB 452), 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.

**Grading:** Course grade is determined by laboratory performance

## 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](http://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

*Prereq: senior standing, overall and BMB GPA of at least 3.5, and approval of application by the BMB Research and Honors Committee.*

*Coreq: BB 497.*

Independent laboratory research under the supervision of a faculty member. Minimum of 12 hours per week in the lab, not including preparation and evaluation. Successful completion of both CAS BB 401 and BB 402 may lead to a degree with honors in the major, although only 4 of the credits may count toward the BMB major. **Grading:** Course grade for both BB 401 and 402 is determined by laboratory performance, oral presentation, written thesis, and defense of the thesis before a committee of three BMB faculty members.

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

## CAS BB 497: HONORS RESEARCH IN BMB SEMINAR

*Coreq: BB 401.*

A one-credit research seminar for students enrolled in Honors Research in BMB (BB 401). A minimum grade of B+ in this course and in CAS BB 401 and CAS BB 402 is required to graduate with Honors in BMB.

## 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](http://www.bu.edu/bmb/bama-bulletin).

## CAS BB 591: GRADUATE RESEARCH IN BMB

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

BMB laboratory research conducted 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 submission to the BMB Director of a written progress report and research outline for BB 592.



# RESEARCH & READINGS

## 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](http://www.bu.edu/biology/forms). These courses are often used as preparation for Undergraduate Research in Biology or Honors Research in Biology. Open to Biology and BMB majors.*

### CAS BI 171: READINGS IN BIOLOGY 1

*Prereq: first year 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.

**Grading:** Individual discussions and/or a paper presentation may be required.

### CAS BI 271: 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.

**Grading:** Individual discussions and/or a paper presentation may be required.

### CAS BI 371: 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.

**Grading:** Individual discussions and/or a paper presentation may be required.

## CAS BI 471: READINGS IN BIOLOGY 4

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

[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.

**Grading:** Individual discussions and/or a paper presentation may be required.

## 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.

**Grading:** Individual discussions and/or a paper presentation may be required.



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