

FALL 2016 BIOLOGY COURSE DIRECTORY

For your advising appointment you will need:

- ✓ Course Directory
- ✓ Degree Advice Report
- ✓ Major/Specialization Guidelines
- ✓ Transcript

REGISTRATION NOTES:

- **For permission required courses:** If contact information is not listed on the Student Link, email Stacy Straaberg Finfrock at stacysf@bu.edu.
- Full time students may take up to 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 may request this fee waiver.
- PDP, ROTC, and CAS FY/SY courses **do not count** towards graduation credits.
- 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

COURSES:

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Courses fulfilling breadth requirements:

Cell & Molecular

CAS BI 203 Cell Biology
CAS BI 213 Intensive Cell Biology

Neurobiology & Physiology

CAS BI 315 Systems Physiology
CAS BI 325 Principles of Neuroscience

Ecology, Behavior & Evolution

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

Upper Level Lab Courses Offered Fall 2016:

CAS BI 306 Biology of Global Change
CAS BI 311 General Microbiology
CAS BI 315 Systems Physiology
CAS BI 407 Animal Behavior
CAS BI 421 Biochemistry I
CAS BI 445 Cell & Molecular Neurophysiology
CAS BI 513 Genetics Laboratory

BIOCHEMISTRY & MOLECULAR BIOLOGY COURSES

NOTE: Minimum of three hours per week per credit of lab or field work, not including preparation and evaluation. No more than 12 credits of undergraduate research may be counted toward the 128 credits required for graduation.

CAS BB 191: UNDERGRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY I

Prereq: freshman standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (laboratory advisor), and approval of application by the BMB Research and Honors Committee.

[2 cr] **Not for BMB major credit.** Laboratory research under the supervision of a faculty member.

CAS BB 291: UNDERGRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY II

Prereq: sophomore standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (laboratory advisor), and approval of application by the BMB Research and Honors Committee.

[2 cr] **Not for BMB major credit.** Laboratory research under the supervision of a faculty member.

CAS BB 391: UNDERGRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY III

Prereq: junior standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (laboratory advisor), and approval of application by the BMB Research and Honors Committee.

[2 or 4 cr] **Two credit option is not for BMB major credit.** Laboratory research under the supervision of a faculty member. A maximum of 4 credits earned in undergraduate research courses may be counted toward the BMB major.

CAS BB 491: UNDERGRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY IV

Prereq: senior standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (laboratory advisor), and approval of application by the BMB Research and Honors Committee.

Laboratory research under the supervision of a faculty member. A maximum of 4 credits earned in undergraduate research courses may be counted toward the BMB major.

CAS BB 401: HONORS RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

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

Coreq: CAS 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. 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 may lead to a degree with honors in the major, although only 4 of the credits may count toward the BMB major. Students must also present a research talk at the BMB symposium at the end of the Spring semester of the academic year. No more than 12 credits of undergraduate research may be counted toward the 128 credits required for graduation from CAS.

CAS BB 497: HONORS RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY SEMINAR II

Prereq: For students currently enrolled in the Honors BMB Program.

[1 cr] A one-credit research seminar for students enrolled in Honors Research in BMB (CAS BB 402) or in BA/MA in Biotechnology research (CAS BB 592). Students present at the BMB Symposium. A minimum grade of B+ in this seminar and in CAS BB 401 and CAS BB 402 is required to graduate with Honors in BMB.

CAS BB 591: GRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

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

Coreq: CAS BB 497 is encouraged.

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 CAS BB 592.

CELL & MOLECULAR

CAS BI 105: INTRODUCTORY BIOLOGY FOR HEALTH SCIENCES

Prereq: None

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 CAS BI 105 if CAS BI 108 has already been passed. Three hour lecture and a two hour lab. Carries natural science divisional credit (with lab) in CAS.

Lecture

A1	Co	Mon,Wed,Fri	9:00am - 10:00am
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Lab

C1	Tue	9:30am - 11:30am	D2	Wed	1:30pm - 3:30am
C2	Tue	12:00pm - 2:00pm	E1	Thu	9:30pm - 11:30pm
C3	Tue	3:00pm - 5:00pm	E2	Thu	12:30pm - 2:30pm
D1	Wed	10:30am - 12:30pm	E3	Thu	3:00pm - 5:00pm

Note: Not for Biology or BMB credit.

CAS BI 203: CELL BIOLOGY

Prereq: CAS BI 108 and CAS CH 102 or equivalent

Principles of cellular organization and function. Topics include biological molecules, flow of genetic information, membranes and subcellular organelles, and cell regulation.

Lecture

A1	Beffert	Tue,Thu	9:30am - 11:00am
		Mon	5:00pm - 6:30pm *
A2	Beffert	Tue,Thu	3:30pm - 5:00pm
		Mon	5:00pm - 6:30pm *

Discussion

B2	Mon	3:00pm - 4:00pm	D3	Wed	3:00pm - 4:00pm
B3	Mon	3:00pm - 4:00pm	D4	Wed	2:00pm - 3:00pm
B4	Mon	2:00pm - 3:00pm	D5	Wed	3:00pm - 4:00pm
B5	Mon	2:00pm - 3:00pm	D6	Wed	12:00pm - 1:00pm
C1	Tue	4:00am - 5:00am	D7	Wed	12:00pm - 1:00pm
D1	Wed	12:00pm - 1:00pm	E2	Thu	1:00pm - 2:00pm
D2	Wed	2:00pm - 3:00pm	E3	Thu	2:00pm - 3:00pm

Notes: Must also be enrolled concurrently in CAS CH 203 or equivalent. Class meets with BI 281 and A1 also meets with BI 218.

* These time slots are reserved for exams.

CAS BI 213: INTENSIVE CELL BIOLOGY

Prereq: CAS BI 108 and CAS CH 102 or equivalent

Molecular basics of cell biology including genomics, subcellular organelles, cell signaling, stem cells, and cancer.

Lecture

A1	Naya	Tue,Thu	9:30am - 11:00am
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Lab

B1	Mon	1:00pm - 2:00pm	B3	Wed	5:00pm - 6:00pm
B2	Wed	12:00pm - 1:00pm	B4	Thu	5:00pm - 6:00pm

Notes: Must also be enrolled in CAS CH 203 or equivalent. This course meets with CAS BI 218.

CAS BI 311: GENERAL MICROBIOLOGY

Prereq: CAS BI 203 and CAS CH 206 or equivalent or consent of the instructor

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

Lecture

A1	Talbot	Mon,Wed,Fri	9:00am - 10:00am
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Lab

B1	Mon,Wed	12:00pm - 2:00pm
B2	Mon,Wed	3:00pm - 5:00pm
B3	Tue,Thu	9:00am - 11:00am
B4	Tue,Thu	2:00pm - 4:00pm

CAS BI 410: DEVELOPMENTAL BIOLOGY

Prereq: CAS BI 203 and CAS BI 206 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 - 3:30pm
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Discussion

B1	Wed	2:00pm - 3:00pm
B2	Wed	3:00pm - 4:00pm

CELL & MOLECULAR

CAS BI 421: BIOCHEMISTRY I

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; introduction to intermediary metabolism.

Lecture

A1	Tolan	Mon	8:00am-10:00am
		Wed, Fri	9:00am - 10:00am
A2	Perlstein	Tue, Thu	2:00pm - 3:30pm
		Mon	5:00pm - 7:00pm *

Lab

BA	Mon	8:00am - 12:00pm	B4	Thu	8:00am - 12:00pm
BB	Mon	1:00pm - 5:00pm	B5	Thu	1:00pm - 5:00pm
BC	Mon	6:00pm - 10:00pm	B6	Thu	6:00pm - 10:00pm
B1	Wed	8:00am - 12:00pm	B7	Fri	8:00am - 12:00pm
B2	Wed	1:00pm - 5:00pm	B8	Fri	1:00pm - 5:00pm
B3	Wed	6:00pm - 10:00pm	B9	Fri	6:00pm - 10:00pm

Discussion

C1	Mon	1:00pm - 2:00pm	C3	Thu	10:00am - 11:00am
C2	Mon	2:00pm - 3:00pm	C4	Thu	1:00pm - 2:00pm

Note - Graduate students will have extra assignments and discussion sections. This class meets with CH 421, BI 621, CH 621, BI 527, and MET CH 421.

* This time slot is reserved for exams.

CAS BI 513: GENETICS LAB

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

Genetic techniques such as mutant selection and screening, complementation, mapping, recombinant DNA, and chemical genetic screening 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	11:00am - 2:00pm
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CAS BI 527: BIOCHEMISTRY LAB I

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

Emphasizes the purification and characterization of proteins and DNA. Development and use of modern instrumentation and techniques.

Lecture

A1	Tolan	Mon	1:00pm - 2:00pm
A2	Tolan	Mon	2:00pm - 3:00pm
A3	Tolan	Thu	10:00am - 11:00am
A4	Tolan	Thu	1:00pm - 2:00pm

Lab

BA	Mon	8:00am - 12:00pm	B4	Thu	8:00am - 12:00pm
BB	Mon	1:00pm - 5:00pm	B5	Thu	1:00pm - 5:00pm
BC	Mon	6:00pm - 10:00pm	B6	Thu	6:00pm - 10:00pm
B1	Wed	8:00am - 12:00pm	B7	Fri	8:00am - 12:00pm
B2	Wed	1:00pm - 5:00pm	B8	Fri	1:00pm - 5:00pm
B3	Wed	6:00pm - 10:00pm	B9	Fri	6:00pm - 10:00pm

Notes: Meets with CAS CH 527, CAS BI/CH 421, GRS BI/CH 621 and MET CH 421.

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

A1	Frydman	Tue, Thu	11:00am - 12:30pm
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Discussion

B1	Thu	10:00am - 11:00pm
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CELL & MOLECULAR

CAS BI 552: MOLECULAR BIOLOGY I

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

Synthesis, structure, and function of biologically important macromolecules (DNA, RNA, and proteins). Regulation and control of the synthesis of RNA and proteins. Introduction to molecular biology of eukaryotes. Discussion of molecular biological techniques, including genetics and recombinant DNA techniques.

Lecture

A1 Loechler Tue, Thu 3:30pm - 5:00pm

Discussion

B1 Tue 5:00pm - 6:00pm
B2 Wed 10:00am - 11:00am
B3 Wed 2:00pm - 3:00pm
B4 Thu 5:00pm - 6:00pm
B5 Wed 3:00pm - 4:00pm

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).

Lecture and Discussion

A1 Siggers Mon, Wed, Fri 11:00am - 12:00pm
Wed 12:00pm - 1:00pm

CAS BI 572: ADVANCED GENETICS

Prereq: CAS BI 206 and CAS BI 203; 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.

Lecture

A1 McCall Tue, Thu 9:30am - 11:00am

Discussion

B1 Wed 10:00am - 11:00am

NEUROBIOLOGY & PHYSIOLOGY

CAS BI 211: HUMAN PHYSIOLOGY

Prereq: (CAS BI 105 or CAS BI 108) and CAS BI 106 or equivalent. Some knowledge of chemistry and anatomy assumed.

Introduction to principles of systemic mammalian physiology with special reference to humans.

Lecture

A1 Co Mon,Wed,Fri 1:00pm - 2:00pm

Lab

Bi Mon 2:00pm - 5:00pm
B2 Mon 6:00pm - 9:00pm
C1 Tue 2:00pm - 5:00pm
D1 Wed 9:00am - 12:00pm
D2 Wed 2:00pm - 5:00pm
D3 Wed 6:00pm - 9:00pm
E1 Thu 9:00am - 12:00pm
E2 Thu 2:00pm - 5:00pm
F1 Fri 9:00am - 12:00pm

Notes: Not for Biology major or minor credit; Biology majors/minors should take CAS BI 315.

CAS BI 315: SYSTEMS PHYSIOLOGY

Prereq: (CAS BI 108 or CAS BI 209), 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 Widmaier Tue,Thu 12:30pm - 2:00pm

Lab

B1 Mon 2:00pm - 5:00pm D3 Wed 6:00pm - 9:00pm
B2 Mon 6:00pm - 9:00pm E1 Thu 9:00am - 12:00pm
C1 Tue 9:00am - 12:00pm E2 Thu 2:00pm - 5:00pm
C2 Tue 6:00pm - 9:00pm E3 Thu 6:00pm - 9:00pm
D1 Wed 9:00am - 12:00pm F1 Fri 9:00am - 12:00pm
D2 Wed 2:00pm - 5:00pm

CAS BI 325: PRINCIPLES OF NEUROSCIENCE

Prereq: CAS BI 203 or consent of instructor.

Fundamentals of the nervous system, emphasizing synaptic transmission; hierarchical organization; autonomic nervous system; mechanisms of sensory perception; reflexes and motor function; biorhythms; and neural mechanisms of feeding, mating, learning, and memory.

Lecture

A1 Gavornik Tue,Thu 12:30pm - 2:00pm

Discussion

B1 Wed 2:00pm - 3:00pm B4 Fri 11:00am - 12:00pm
B2 Wed 3:00pm - 4:00pm B5 Fri 1:00pm - 2:00pm
B3 Fri 9:00am - 10:00am B6 Fri 2:00pm - 3:00pm

Notes: Students may elect to take NE 203, which features a laboratory component. Meets with NE 203.

CAS BI 445: CELLULAR AND MOLECULAR NEUROPHYSIOLOGY

Prereq: CAS BI 203, CAS BI 315, CAS NE 203, or consent of instructor

Cellular and molecular basis of neural excitability and synaptic transmission. The molecular understanding of ion channels is extrapolated to higher brain functions such as learning, memory, and sleep.

In the lab, we learn to obtain intracellular and extracellular recordings from muscle fibers and the third motor nerve of crayfish ventral nerve cord. The extracellular recordings allow us to monitor the network activity that controls the animal's posture while the intracellular recordings allow us to investigate synaptic transmission. Quantitative analyses of experimental data will be performed. The entire class will contribute to a research project with the expectation that the data pooled from all students should be of sufficient quantity and quality for a publication.

Lecture

A1 Lin Mon,Wed,Fri 12:00pm - 1:00pm

Lab

B1 Fri 2:00pm - 5:00pm

Notes: Meets with BI 645 and NE 445.

NEUROBIOLOGY & PHYSIOLOGY

CAS BI 455: DEVELOPMENTAL NEUROBIOLOGY

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

Fundamental principles of developmental neurobiology, stressing molecular mechanisms that underlie early neural development, differentiation, process outgrowth, and behavior.

Lecture

A1	Man	Mon	10:00am - 12:00pm
		Fri	10:00am - 12:00pm

Notes: Meets with NE 455.

CAS BI 481: MOLECULAR BIOLOGY OF NEURONS

Prereq: CAS 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.

Lecture

A1	Ho	Mon, Wed, Fri	1:00pm - 2:00pm
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Discussion

B1	Mon	3:00pm - 4:00pm
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Notes: Meets with BI 681.

CAS BI 520: SENSORY NEUROBIOLOGY

Prereq: CAS BI 325 or CAS NE 203 or consent from instructor

A broad survey of sensory system function in model organisms and humans, focusing on fundamental principles of neural processing. Topics include basic cellular transduction, neural coding, and links between neural activity and sensory perception.

Lecture

A1	Davison	Tue,Thu	11:00am - 12:30pm
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Discussion

BI	Wed	4:00pm - 5:00pm
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Notes: Meets with NE 520.

CAS BI 525: BIOLOGY OF NEURODEGENERATIVE DISEASES

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

This course focuses on understanding the molecular mechanisms that are at the basis of neurodegenerative diseases and on their impact and relevance in clinical diagnosis and treatment. Neurodegenerative diseases like Alzheimer's disease, Parkinson's disease, Amyotrophic Lateral Sclerosis, Huntington's Disease and Cruetzfeldt-Jakob disease are becoming more and more common since people are more exposed to pathogenic agents (as in Cruetzfeldt-Jakob disease and Mad Cow disease) or just encounter these diseases as a result of aging (like Alzheimer's or Parkinson's disease). Although very different from one another, these diseases share common mechanisms and features leading to neuronal death, including protein misfolding and aggregation, oxidative stress, impaired protein degradation, and apoptosis. This course will study how these molecular pathways define each disease, contributing to neurodegenerative phenomena. Relevance will be given to Alzheimer's disease.

Independent

A1	Pastorino	Mon, Fri	9:00am - 10:00am
		Wed	9:00am - 11:00am

Notes: Meets with NE 525.

CAS BI 535: TRANSLATION 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,Fri	2:00pm - 3:00pm
		Wed	2:00pm - 4:00pm

Notes: Meets with NE 535.

NEUROBIOLOGY & PHYSIOLOGY

CAS BI 545: NEUROBIOLOGY OF MOTIVATED BEHAVIOR

Prereq: CAS BI 315 or CAS BI 325 or CAS NE 201 or consent of instructor.

Molecular and neuroendocrine mechanisms controlling reproductive and parental behaviors, ingestive behaviors and metabolism, and circadian rhythms, pain perception, and reward in vertebrates.

Lecture

A1 Baum Tue, Thu 2:00pm - 3:30pm

Discussion

B1 Thu 3:30pm - 5:00pm

B2 Thu 3:30pm - 5:00pm

Notes: Meets with NE 545.

CAS BI 581 C1: SEMINAR IN BIOLOGY: EXPLORING NEURAL CIRCUITS

Prereq: CAS BI 325 and consent of the instructor

[2 cr] A major goal of neuroscience research is to understand how the coordinated patterns of neural activity lead to complex behavior. This course will use current research articles to review the new tool sets that are being developed to dissect neural circuits, such as optogenetic and pharmacogenetic approaches, in vivo measurement strategies with genetically encoded calcium indicators (GECIs), viral tracing approaches to label and to manipulate neural activity and multiple mouse transgenic intersectional strategies. In addition, the course will rely heavily on discussion of recent literature that combines these approaches to dissect the function and wiring patterns of specific neural circuits.

Lecture

CI Cruz-Martin Tue, Thu 10:00am - 12:00pm

ECOLOGY, BEHAVIOR & EVOLUTION

CAS BI 107: BIOLOGY I

Prereq: None; 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. Carries natural science divisional credit (with lab) in CAS.

Lecture

A1	Schneider, Sorenson, Spilios, Wasserman	Tue,Thu	12:30pm - 2:00pm
A2	Schneider, Sorenson, Spilios, Wasserman	Mon,Wed,Fri	3:00pm - 4:00pm

Lab

B1	Mon	4:00pm - 7:00pm	D6	Wed	1:30pm - 4:30pm
B2	Mon	4:30pm - 7:30pm	D7	Thu	4:00pm - 7:00pm
C1	Tue	8:30am - 11:30am	E1	Thu	8:30am - 11:30am
C2	Tue	9:00am - 12:00pm	E2	Thu	9:00am - 12:00pm
C3	Tue	9:30am - 12:30pm	E3	Thu	9:30am - 12:30pm
C4	Tue	12:00pm - 3:00pm	E4	Thu	12:00pm - 3:00pm
C5	Tue	12:30pm - 3:30pm	E5	Thu	12:30pm - 3:30pm
C6	Tue	1:00pm - 4:00pm	E6	Thu	1:30pm - 4:30pm
C7	Tue	4:00pm - 7:00pm	E7	Thu	4:30pm - 7:30pm
D1	Wed	8:30am - 11:30am	E8	Thu	4:00pm - 7:00pm
D2	Wed	9:00am - 12:00pm	F1	Fri	8:00am - 11:00pm
D3	Wed	9:30am - 12:30pm	F2	Fri	9:00am - 12:00pm
D4	Wed	12:00pm - 3:00pm	F3	Fri	10:00am - 1:00pm
D5	Wed	12:30pm - 3:30pm			

CAS BI 225: BEHAVIORAL BIOLOGY

Prereq: CAS BI 107 and CAS BI 108 and at least sophomore standing. CAS AN 102 may be accepted as a prerequisite with consent of instructor.

Introduction to the genetics, physiology, neurobiology, ecology, and evolution of behavior. Topics include gene/environment interaction, hormones and behavior, neuroethology, communication, reproductive behavior, evolution of cooperation and altruism, cognition and brain evolution. Emphasis on integrative analysis.

Lecture

A1	Traniello	Tue,Thu	12:30pm - 2:00pm
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Discussion

B1	Tue,Thu	2:00pm - 2:30pm
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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 - 12:30pm
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Lab

B1	Tue	2:00pm - 5:00pm	C2	Wed	2:00pm - 5:00pm
C1	Wed	10:00am - 1:00pm	F1	Thu	2:00pm - 5:00pm

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	10:00am - 11:00am
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Discussion

B1	Thu	3:00pm - 4:00pm	B4	Thu	2:00pm - 3:00pm
B2	Wed	12:00pm - 1:00pm	B5	Wed	4:00pm - 5:00pm
B3	Wed	1:00pm - 2:00pm	B6	Fri	1:00pm - 2:00pm

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.

Lecture

A1	Wasserman	Tue,Thu	3:30pm - 5:00pm
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Lab

B1	Mon	2:00pm - 5:00pm	F1	Fri	2:00pm - 5:00pm
D1	Wed	12:00pm - 3:00pm			

Notes: Meets with BI 607.

ECOLOGY, BEHAVIOR & EVOLUTION

CAS BI 443: TERRESTRIAL BIOGEOCHEMISTRY

Prereq: (CAS BI107 or CAS ES 101 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 Finzi Mon, Wed, Fri 11:00am - 12:00pm

Notes: Meets with ES 443, BI 643, and ES 643.

CAS BI 448: BIODIVERSITY AND CONSERVATION BIOLOGY

Prereq: CAS BI 303 or CAS BI 306 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.

Lecture and Discussion

A1 Primack Mon, Wed, Fri 11:00am - 12:00pm
Fri 1:00pm - 2:00pm

Notes: Meets with BI 648.

MARINE SEMESTER

You do not need to be a Marine Science student to take these classes. However, you must apply for the Marine Program. For more information, go to <http://www.bu.edu/bump/marine-semester/>

CAS BI 523: MARINE URBAN ECOLOGY

Prereq: None

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. Also offered as CAS GE 523.

Lecture

MS Rotjan Arranged Oct. 3 - Oct. 28

CAS BI 531: ICHTHYOLOGY: BEHAVIOR, ECOLOGY, AND EVOLUTION OF FISH

Prereq: CAS BI 206 and consent of instructor

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. This course is a prerequisite for the field course.

Lecture

MS Lobel Arranged Nov. 28 - Dec. 21

CAS BI 539: CORAL REEF DYNAMICS: SHALLOW WATERS, DEEP TIME

Prereq: None

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.

Lecture

MS Stewart Arranged Nov. 28 - Dec. 21

CAS BI 541: CORAL REEF RESILIENCE AND RESTORATION

Prereq: Junior or senior standing

Caribbean coral reefs have fallen into ruin. Students develop methods to restore reef health by applying genomics, life history theory, landscape ecology and climatology. This course is an advanced follow-on to CAS BI/ES 539 (Coral Reef Dynamics), and includes field work in Belize.

Lecture

MS Kaufman Arranged Nov. 28 - Dec. 21

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

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.

Lecture

MS Biedron Arranged Sept. 5 - Oct. 7

CAS BI 550: MARINE GENOMICS

Prereq: None

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.

Lecture

MS Finnerty Arranged Nov. 28 - Dec. 21

MARINE SEMESTER

CAS BI 563: SENSORY BIOLOGY OF AQUATIC ANIMALS

Prereq: CAS BI 260 and junior and senior standing or consent of the instructor

Underwater signals, physics of signal transmission, receptors, sense organs, animal behavior. Focus on student-generated research projects: design, animal care, data collection, analysis and presentation.

Lecture

MS Atema Arranged Oct. 3 - Oct. 28

CAS BI 569: TROPICAL MARINE INVERTEBRATES

Prereq: CAS BI 107 and CAS BI 260

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.

Lecture

MS Stewart Arranged Oct. 31 - Nov. 23

CAS BI 578: MARINE GEOGRAPHIC INFORMATION SCIENCE

Prereq: CAS BI 107 and CAS ES 114; CAS MA 213 is strongly recommended

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. Also offered as CAS GE 578.

Lecture

MS Wikgren Arranged Oct. 31 - Nov. 23

METROPOLITAN COLLEGE (MET)

MET courses cover the same material as CAS courses but offer alternative schedules.

MET BI 105: INTRODUCTORY BIOLOGY FOR HEALTH SCIENCES

Prereq: High school biology and chemistry are assumed.

Principles of biology: emphasis on cellular structure, heredity, development, and organic evolution. Intended for non-majors as well as for those concentrating in the health and paramedical sciences.

Lecture

A1 Stanford Mon 6:00pm - 9:00pm

Lab

C1 Wed 6:00pm - 9:00pm

Notes: Not for Biology or BMB major credit.

MET BI 107: BIOLOGY I

Prereq: Assumes year of high school biology and chemistry

The evolution and diversity of life; principles of ecology; behavioral biology. For premedical students and students who plan to concentrate in the natural sciences.

Lecture

A1 Lavalı Mon 6:00pm - 9:00pm

Lab

C1 Wed 6:00pm - 9:00pm

Notes: BI 107 is required of Biology majors. It is recommended that CH 101 and CH 102 be taken prior to or concurrently.

MET BI 203: CELL BIOLOGY

Prereq: BI 108 and CH 102 or equivalent

Principles of cellular organization and function: biological molecules, enzymes, bioenergetics, membranes, motility, regulatory mechanisms.

Lecture

B1 Adams Tue 6:00pm - 8:00pm
Thu 6:00pm - 7:00pm

Discussion

D1 Thu 7:00pm - 8:00pm

Juniors and seniors can take one MET course per semester.

All other students must request permission from Steve Jarvi, Associate Dean for Student Life, at sjarvi@bu.edu.

MET BI 211: HUMAN PHYSIOLOGY

Prereq: BI 105 or equivalent.

Designed for non-biology majors. Introduction to physiology. Principles of physiology with special reference to humans.

Lecture

D1 Vyshedskiy Thu 6:00pm - 9:00pm

Lab

B1 Tue 6:00pm - 9:00pm

MET BI 407: ANIMAL BEHAVIOR

Prereq: BI 105 or equivalent

Ethological approach to animal behavior, including humans; physiological, ontogenetic, and phylogenetic causes and adaptive significance of behavior within an evolutionary framework.

Lecture

A1 Wasserman Mon 6:00pm - 9:00pm

Lab

C1 Wed 6:00pm - 9:00pm

MET BI 426: NEUROBIOLOGY OF CONSCIOUSNESS

Prereq: BI 108 or equivalent

In this class we will dive into the neuroscience of imagination: from neurons to memory to neurological control of novel conscious experiences. We will study what makes your brain unique and the selectional forces that shaped the brains of our ancestors. We will discuss what makes human language special and how it evolved.

Lecture

C1 Vyshedskiy Wed 6:00pm - 9:00pm

RESEARCH & READINGS

NOTE: Minimum of three hours per week per credit of lab or field work. No more than 12 credits of directed study courses may be counted toward the 128 credits required for graduation.

CAS BI 191: UNDERGRADUATE RESEARCH IN BIOLOGY I

Prereq: freshman standing, consent of instructor, and completed application.

[2 cr] **Not for biology major or minor credit.** Research in biological science for students at the freshman level. Students design and implement a research project with a faculty member.

CAS BI 291: UNDERGRADUATE RESEARCH IN BIOLOGY II

Prereq: sophomore standing, consent of instructor, and completed application.

[2 cr] **Not for biology major or minor credit.** Research in biological science for students at the sophomore level. Students design and implement a research project with a faculty member.

CAS BI 391: UNDERGRADUATE RESEARCH IN BIOLOGY III

Prereq: junior standing, consent of instructor, and completed application.

[2 or 4 cr] **Two credit option not for Biology major or minor credit.** Research in biological science for students at the junior level. Students design and implement a research project with a faculty member. One 4 credit research course can count toward the 3-lab requirement and fulfill an upper level elective. A second 4 credit research course can fulfill an upper level elective.

CAS BI 491: UNDERGRADUATE RESEARCH IN BIOLOGY IV

Prereq: junior or senior standing, consent of instructor, and completed application.

Research in biological science for students at the senior level. Students design and implement a research project with a faculty member. Research topic must be defined at the time of registration. Course grade is to be determined by laboratory performance and written report. One 4 credit research course can count toward the 3-lab requirement and fulfill an upper level elective. A second 4 credit research course can fulfill an upper level elective.

CAS BI 401: HONORS RESEARCH IN BIOLOGY

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

Mentored laboratory or field research with a faculty member of the Biology Department leading to graduation with Honors in Biology. One 4 credit research course can count toward the 3-lab requirement and fulfill an upper level elective. A second 4 credit research course can fulfill an upper level elective.

CAS BI 171: READINGS IN BIOLOGY I

Prereq: freshman standing, consent of instructor, and completed application.

[2 cr] **Not for biology major or minor credit.** Library research on a well-defined topic in biological sciences, chosen in conjunction with a faculty member. Individual conferences and discussion with the faculty member are required as well as a paper presentation.

CAS BI 271: READINGS IN BIOLOGY II

Prereq: sophomore standing, consent of instructor, and completed application.

[2 cr] **Not for biology major or minor credit.** Library research on a well-defined topic in biological sciences, chosen in conjunction with a faculty member. Individual conferences and discussion with the faculty member are required as well as a paper presentation.

CAS BI 371: READINGS IN BIOLOGY III

Prereq: junior standing, consent of instructor, and completed application.

[2 cr] **Not for biology major or minor credit.** Library research on a well-defined topic in biological sciences, chosen in conjunction with a faculty member. Individual conferences and discussion with the faculty member are required as well as a paper presentation.

CAS BI 471: READINGS IN BIOLOGY IV

Prereq: junior or senior standing, cumulative GPA in biology of at least 3.0, and consent of instructor.

[2 cr] **Not for biology major or minor credit.** Intensive library research on a well-defined subject, followed by individual conferences and discussion with a faculty member. May be taken as preparation for CAS BI 401, 402, 491, and 492.

CAS BI 497: HONORS RESEARCH IN BIOLOGY SEMINAR

Prereq: CAS BI 107 & CAS BI 108 and at least two additional biology courses. For students currently enrolled in or intending to apply to the Honors in Biology Program.

[2 cr] A 2-credit weekly research seminar for students in the Honors in Biology Program. A minimum grade of B+ and a written assignment based on a research topic in one of the seminars is required to graduate with honors. Juniors enrolled in BI 497 or 498 must have a current faculty research mentor (See the Biology website or contact the Undergraduate Program Specialist in the Department of Biology).

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* Marine Semester