FALL 2019
BIOLOGY COURSE DIRECTORY

For advising you will need:
Degree Advice Report, Transcript Preview, Advising Worksheet & Course Directory

COURSE NOTES:

Courses fulfilling breadth requirements:
Cell & Molecular (CM)
CAS/MET 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/MET BI 407 Animal Behavior

Physiology & Neurobiology (PN)
CAS BI 315 Systems Physiology
CAS BI 325/NE 203 Principles of Neuroscience

Upper Level Biology Lab Courses:
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/MET BI 407 Animal Behavior
CAS/MET BI/CH 421 Biochemistry 1
CAS BI/NE 445 Cell & Molecular Neurophysiology
CAS BI 513 Genetics Laboratory
CAS BI 527 Biochemistry Lab 1
CAS BI Marine Semester Courses
CAS BI Tropical Ecology Program Courses
CAS BI Undergraduate Research Courses (first 4-credit semester)

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REGISTRATION NOTES:

• Permission required courses: Students may not register for these courses on their own, but need the instructor to sign an Add/Drop form which the student would take to CAS Advising or the Registrar.

• 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.

• Non-majors courses: The following courses do not count toward the Biology or BMB major or minor:
  CAS/MET BI 105 Introductory Biology for Health Sciences
  CAS/MET BI 211 Human Physiology

3/22/2019
UNDERGRADUATE RESEARCH IN BMB

Undergraduate Research in Biochemistry and Molecular Biology courses (CAS BB 191 - CAS BB 491) require an application. For more information on research requirements and to apply, visit www.bu.edu/bmb/research. Time commitment is a minimum of 6 hours a week for 2-credit research and 12 hours a week for 4-credit research, not including preparation and evaluation.

CAS BB 191: UNDERGRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY 1

Prereq: freshman standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), 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 BMB faculty mentor. 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 291: UNDERGRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY 2

Prereq: sophomore standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), 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 BMB faculty mentor. 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 391: UNDERGRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY 3

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

[2 or 4 cr] Two-credit option not for BMB major credit. Laboratory research under the supervision of a BMB faculty mentor. Research outside the BMB program is acceptable if approved and overseen by a BMB faculty sponsor. Students can use one semester of 4-credit research to fulfill a BMB elective if not using Undergraduate Research or Honors Research for the advanced lab elective.

Grading: Course grade is determined by laboratory performance.

CAS BB 491: UNDERGRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY 4

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

Laboratory research under the supervision of a BMB faculty mentor. Research outside the BMB program is acceptable if approved and overseen by a BMB faculty sponsor. Students can use one semester of 4-credit research to fulfill a BMB elective if not using Undergraduate Research or Honors Research for the advanced lab elective.

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 BIOCHEMISTRY AND MOLECULAR BIOLOGY**

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

Coreq: CAS BB 497

Independent laboratory research under the supervision of a BMB faculty mentor. Research outside the BMB program is acceptable if approved and overseen by a BMB faculty sponsor. Successful completion of both CAS BB 401 and BB 402 may lead to a degree with honors in the major. Students must also present a research talk at the BMB symposium at the end of the spring semester of the academic year.

Grading: Course grade is determined by laboratory performance, oral presentation, written thesis, and defense of the thesis before a committee of three BMB faculty members.

**CAS BB 497: HONORS RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY SEMINAR 1**

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

Coreq: CAS BB 401

[1 cr] A one-credit research seminar for students enrolled in Honors Research in BMB (CAS BB 401) or Graduate Research in BMB (CAS BB 591). Students present at the BMB Symposium. A minimum grade of B+ in BB 497/498 and BB 401/402 is required to graduate with Honors in BMB.

A1 Tolan Arranged

Grading: Attendance and participation.

**GRADUATE RESEARCH IN BMB**

Graduate Research in BMB is offered as part of the BA/MA program. This five-year 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 BIOCHEMISTRY AND MOLECULAR BIOLOGY**

Prereq: Admission to the BA/MA Program.

Coreq: CAS BB 497 is encouraged.

Laboratory research conducted under the supervision of a BMB faculty sponsor. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. 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.

Grading: Course grade is determined by laboratory performance.

**BMB major courses can also be found in these sections:**

- Cell & Molecular (pgs. 4-8)
- Physiology & Neurobiology (pgs. 11-13)
- Metropolitan College (MET) (pgs. 17-18)

A list of courses accepted toward the BMB major can be found in the Bulletin at [www.bu.edu/bmb/bulletin](http://www.bu.edu/bmb/bulletin).
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 Staff Mon, Wed, Fri 9:05am - 9:55am

Lab
C1 Mon 12:20pm - 2:05pm
C2 Mon 2:30pm - 4:15pm
C3 Tue 1:30pm - 3:15pm
D1 Tue 3:30pm - 5:15pm
D2 Wed 10:10am - 11:55am
E1 Wed 2:30pm - 4:15pm
E2 Thu 1:30pm - 3:15pm
E3 Thu 3:30pm - 5:15pm

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


Grading: Four lecture exams (54%), lecture assignments and homework (11%), and laboratory exercises and exams (35%).

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

CAS BI 194: TOPICS IN BIOLOGY: HUMAN GENETICS

Prereq: None.

Not for Biology or BMB major/minor credit. This course is designed to help you understand fundamental concepts of genetics so that you may comprehend how current advances in the field are affecting our society. Emphasis on classical and molecular genetics, advances in genetic technologies, and social and ethical issues related to genetic testing.

Lecture and Discussion
A1 Faszewski Tue, Thu 3:30pm - 4:45pm
Thu 5:00pm - 5:50pm

Notes: Not for Biology or BMB major or minor credit.


Grading: Three lecture exams (45%), cumulative final (15%), discussion (30%), and current event assignment (10%).

Hub Units: Scientific Inquiry I.
**CAS BI 203: CELL BIOLOGY**

*Prereq: CAS BI 108 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  1:25pm - 2:15pm
B3  Mon  12:20pm - 1:10pm  D5  Wed  2:30pm - 3:20pm
B4  Mon  1:25pm - 2:15pm  D6  Wed  2:30pm - 3:20pm
B5  Mon  12:20pm - 1:10pm  E1  Thu  11:15am - 12:05pm
B6  Mon  1:25pm - 2:15pm  E2  Thu  11:15am - 12:05pm
B7  Mon  11:15am - 12:05pm  F1  Fri  11:15am - 12:05pm
C1  Tue  11:15am - 12:05pm  F2  Fri  1:25pm - 2:15pm
C2  Tue  11:15am - 12:05pm  F3  Fri  3:35pm - 4:25pm
D1  Wed  11:15am - 12:05pm
D2  Wed  12:20pm - 1:10pm
D3  Wed  1:25pm - 2:15pm

**Notes:** Class meets with BI 281 and A1 also meets with BI 218. Students may receive credit for CAS BI 203 or 213, but not both courses.

**Textbook & Technology:** The Cell 8e by Geoffrey Cooper, Oxford University Press, 2018, electronic access to Dashboard (supplied with certain editions of the textbook available through the BU Bookstore)

**Grading:** Three midterm exams, homework, in class questions and a final examination.

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**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

**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.


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


A2 Beffert Tue, Thu 3:30pm - 4:45pm
Mon 6:30pm - 8:00pm


A3 Naya Tue, Thu 9:30 - 10:45am

Meets with BI 213.

**Discussion**
B1 Spilios Register for a BI 203 or 213 discussion.

**Lab**
L1 Spilios Wed. 12:20pm - 4:20pm

**Prelab**
P1 Pastorino Mon 2:30pm - 4:15pm


**Grading:** Lecture (75%) and laboratory (25%).

CAS BI 281: FUNDAMENTALS OF BIOLOGY 1
Limited to seven-year medical students. 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, three hours lab.

**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

*Time slot reserved for exams.

**Lab**
C1 Fri 8:00am - 10:45am
C2 Fri 11:15am - 2:00pm

**Discussion**
Please register for a BI 203 discussion.

CAS BI 311: GENERAL MICROBIOLOGY
Prereq: CAS BI 203 and CAS BI 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 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 Angell Mon, Wed, Fri 9:05am - 9:55am

**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


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

**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 2:30pm - 3:20pm

B2 Wed 3:35pm - 4:25pm

*Notes: Meets with GRS BI 610.*

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

*Grading: Three exams plus discussion grade.*

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**CAS BI 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 allosteroy; nucleic acid structure; lipids and membrane structure; bioenergetics; vitamins and coenzymes; introduction to intermediary metabolism. See BI 527 for lab content.

*Lecture*

A1 Tolan Mon 8:00am - 8:50am

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

A2 Perlstein Tue, Thu 2:00pm - 3:15pm

Mon 5:45pm - 7:45pm*

*Timeslot reserved for exams*

*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

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

*Textbooks & Technology: Lehninger, Principles of Biochemistry, 7th ed., Nelson and Cox*

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

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**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

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

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

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**CAS BI 527: 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 Medrano Mon 12:20pm - 2:05pm

A2 Medrano Tue 3:30pm - 5:15pm

A3 Medrano Thu 9:00am - 10:45am

*Lab*

B1 Wed 8:00am - 12:00pm

B2 Wed 1:25pm - 5:25pm

B3 Wed 6:30pm - 10:30pm

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


*Grading: Lab notebook, reports, attendance, safety, and participation.*
**CELL & MOLECULAR**

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**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.

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**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, 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 exams

**Discussion**

**B1**
- Tue  
  - 5:00pm - 5:50pm

**B2**
- Wed  
  - 10:10am - 11:00am

**B3**
- Wed  
  - 2:30pm - 3:20pm

**B4**
- Thu  
  - 5:00pm - 5:50pm

**B5**
- Wed  
  - 3:35pm - 4:25pm

**B6**
- Wed  
  - 1:25pm - 2:15pm

**Textbooks & Technology:** TBD.

**Grading:** 3 exams (25% each), homework (12.5%), and discussion participation (12.5%).

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**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*

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

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

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**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.

*Independent*

**A1**
- McCall  
  - Mon, Wed  
  - 2:30pm - 4:15pm

**Textbook:** Meneely, *Genetic Analysis: Genes, Genomes, and Networks in Eukaryotes*, 2nd Ed., Oxford University Press, 2014

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

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**Additional electives for the CMG specialization can be found in these sections:**

- Ecology, Behavior & Evolution (pgs. 9-10)
- Physiology & Neurobiology (pgs. 11-13)
- Marine Semester (pgs. 14-15)
- Metropolitan College (MET) (pgs. 17-18)
- Research & Readings (pgs. 19-20)

A list of courses accepted toward the CMG specialization can be found in the Bulletin at [www.bu.edu/biology/cmg-bulletin](http://www.bu.edu/biology/cmg-bulletin).
CAS BI 107: BIOLOGY 1
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 Mullen, Spilios, Wasserman Tue, Thu 12:30pm - 1:45pm
A2 Mullen, Spilios, Wasserman Mon, Wed, Fri 2:30pm - 3:20pm

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 Thu 6:30pm - 9:15pm
C1 Tue 8:00am - 10:45am D8 Wed 6:30pm - 9:15pm
C2 Tue 8:00am - 10:45am E1 Thu 8:00am - 10:45am
C3 Tue 8:00am - 10:45am E2 Thu 8:00am - 10:45am
C4 Tue 12:30pm - 3:15pm E3 Thu 8:00am - 10:45am
C5 Tue 12:30pm - 3:15pm E4 Thu 12:30pm - 3:15pm
C6 Tue 12:30pm - 3:15pm E5 Thu 12:30pm - 3:15pm
C7 Tue 3:30pm - 6:15pm E6 Thu 12:30pm - 3:15pm
C8 Tue 3:30pm - 6:15pm E7 Thu 6:30pm - 9:15pm
D1 Wed 8:00am - 10:45am E8 Thu 6:30pm - 9:15pm
D2 Wed 8:00am - 10:45am E9 Thu 6:30pm - 9:15pm
D3 Wed 8:00am - 10:45am F1 Fri 8:00am - 10:45am
D4 Wed 2:30pm - 5:15pm

Grading: 4 Lecture exams and Lab assignments.
Hub Units: Scientific Inquiry I, Quantitative Reasoning I, Critical Thinking, Research and Information Literacy.

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 ecology, sociobiology, hormones and behavior, neuroethology, behavioral genetics, development, communication, reproductive behavior, cooperation and altruism, cognition and brain evolution. Emphasis on integrative analysis.

Independent
A1 Traniello Tue, Thu 1:30pm - 3:15pm

Textbooks & Technology: Primary literature and complementary readings; Traniello, Behavioral Biology, 1st ed., 2012; Alcock, Animal Behavior, edition TBA

Grading: 3 quizzes, research paper, class presentation, engagement, and participation.

CAS BI 305: PLANT BIOLOGY
Prereq: (CAS BI 107 and CAS BI 108)
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

Lab
A1 Primack Mon 2:30pm - 5:15pm

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 Fri 11:15am - 2:00pm
C1 Wed 2:30pm - 5:15pm F1 Thu 12:30pm - 3:15pm


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


Grading: Two midterms (total of 40%), final exam (20%), discussion (20%), and paper assignment (20%).

Hub Units: Ethical Reasoning

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  F1 Fri 2:30pm - 5:15pm
D1 Thu 12:30pm - 3:15pm

Notes: Meets with BI 607.

Textbooks & Technology: None.
Grading: 3 Lecture exams (66%) and lab (34%).

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 1:25pm - 2:15pm
       Wed 2:30pm - 3:20pm

Notes: Meets with BI 648.

Grading: Two exams, oral presentation, term paper, and quizzes.

Additional electives for the ECB specialization can be found in these sections:

- Cell & Molecular (pgs. 4-8)
- Marine Semester (pgs. 14-15)
- Tropical Ecology Program (pg. 16)
- Metropolitan College (MET) (pgs. 17-18)
- Research & Readings (pgs. 19-20)

A list of courses accepted toward the ECB specialization can be found in the Bulletin at www.bu.edu/biology/ecb-bulletin.

Additional electives for the SBB specialization can be found in these sections:

- Physiology & Neurobiology (pgs. 11-13)
- Marine Semester (pgs. 14-15)
- Tropical Ecology Program (pg. 16)
- Research & Readings (pgs. 19-20)

A list of courses accepted toward the SBB specialization can be found in the Bulletin at www.bu.edu/biology/sbb-bulletin.
CAS BI 325: PRINCIPLES OF NEUROSCIENCE

Prereq: CAS BI 203 or consent of instructor.

This course will introduce the fundamentals of the nervous system at levels of description ranging from the biophysics of individual neurons to behavior. Topics will include excitable membranes, synaptic transmission, sensory and motor systems, learning and memory, the autonomic nervous system, and the neural basis of conscious and unconscious behavior.

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

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

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


Grading: Texts, quizzes, and participation.
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.

We focus on how different neurons in mammalian CNS generate their unique firing patterns and how these patterns shape network outputs through synapses. Our approach to these questions is to start from the perspective of ion channel kinetics and build up from there to gain insights to whole brain functions—such as learning, sleeping and epilepsy. In the laboratory, we perform extracellular and intracellular recordings from motor axons and muscle fibers of crayfish ventral superficial flexor. This nerve-muscle system remains active in vitro and allows us to examine how drugs used to treat seizure affect outputs of an active network. The entire class will contribute to a project with the expectation that, collectively, the data should be of sufficient quantity and quality for a publication.

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

Discussion*
B1 Thu 3:35pm - 4:45pm

Lab
C1 Fri 2:30pm - 5:15pm

*B1 is the prelab

Notes: Meets with NE 445 and BI 645. B1 is prelab.


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

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 Fri 10:10am - 11:55am

Wed* 10:10am - 11:55am

*Also includes paper presentation

Notes: Meets with NE 455.


Grading: One midterm and one final exam.

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 Creutzfeldt-Jakob disease are becoming more and more common since people are more exposed to pathogenic agents (as in Creutzfeldt-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, Wed, Fri 9:05am - 9:55am

Wed 10:10am - 11:00am

Notes: Meets with NE 525.

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%).
**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%).

**CAS BI 581 H1: SEMINAR IN BIOLOGY: NEUROBIOLOGY OF BRAIN DISORDERS**

**Prereq:** Consent of instructor.

[2 cr] Not for Biology major or minor credit unless two semesters of different topics are taken. This course reviews recent topics and readings in the field of neurodegeneration that span disorders affecting neurodevelopment, learning and memory and aging. Specifically, the course will probe cellular and molecular mechanisms underlying cell death. In addition, the class will probe commonalities of the diseases, genetic risk factors and the usefulness and limitations of animal models. Also, we will discuss different interdisciplinary approaches that include molecular genetics tools in mice, biochemistry, cell biology and electrophysiology in addressing biomedical-related problems in neuroscience.

*Independent*

H1 Ho Mon 10:10am - 11:55am

**Notes:** [2 cr] Not for Biology major or minor credit unless two sections of BI 581/582 are taken.

**Textbooks & Technology:** None.

**Grading:** Participation (50%), Oral Presentation (50%).

**CAS BI 594: TOPICS IN BIOLOGY: MECHANISMS OF BEHAVIOR**

**Prereq:** (CAS BI 225 or CAS BI 315 or CAS BI 325 or CAS NE 203) or consent of instructor.

This course provides a broad overview of the neural, endocrine, genetic, developmental, and physiological mechanisms that generate and modulate the behaviors of animals. Topics include foraging, reproductive, parental, and social behaviors; neural timekeeping and circadian and seasonal behaviors; motivational and attentional mechanisms; learning and behavioral plasticity; and decision making. Emphasis will be placed on appreciating how multiple innate and environmental factors interact to affect the development and expression of most natural behaviors.

**Lecture & Discussion**

M1 Muscedere Tue, Thu 3:30pm - 4:45pm

Mon 2:30pm - 3:20pm

**Textbooks & Technology:** None.

**Grading:** Three exams (60%), Group project and class presentation (20%), participation and in-class assignments in discussion (20%).

**CAS BI 598: NEURAL CIRCUITS**

**Prereq:** (CAS BI 325 or CAS NE 203) and PY 106.

This course reviews modern techniques and tools that are capable of dissecting neural circuits, which are critical for understanding how coordinated patterns of neural activity lead to complex behavior. Recent literature on information processing, guided behavior and cognition is discussed.

*Independent*

A1 Cruz-Martín Tue, Thu 9:00am - 10:45am

**Notes:** Meets with NE 598.

**Textbooks & Technology:** None.

**Grading:** Presentations and discussion.

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**Additional electives for the Neurobiology specialization can be found in these sections:**

- Cell & Molecular (pgs. 4-8)
- Ecology, Behavior & Evolution (pgs. 9-10)
- Metropolitan College (MET) (pgs. 17-18)
- Research & Readings (pgs. 19-20)

A list of courses accepted toward the Neurobiology specialization can be found in the Bulletin at [www.bu.edu/biology/nb-bulletin](http://www.bu.edu/biology/nb-bulletin).
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. All CAS BI Marine Semester courses count as lab electives toward the Biology, Behavioral Biology, and Ecology & Conservation Biology majors.

**CAS BI 531: Ichthyology: Behavior, Ecology, and Evolution of Fish**  
*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.  
**Lecture**  
MS Lobel Arranged Nov. 21 - Dec. 20

**CAS BI 539: Coral Reef Dynamics: Shallow Waters, Deep Time**  
*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 a 12-day field trip to Belize.  
**Lecture**  
MS Rotjan Arranged Nov. 21 - Dec. 20

**CAS BI 541: Coral Reef Resilience and Restoration**  
*Prereq: Junior or senior standing; 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.  
**Lecture**  
MS Kaufman Arranged Oct. 28 - Nov. 20

**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.  
**Lecture**  
MS Staff Arranged Sept. 5 - Sept. 30

**CAS BI 550: Marine Genomics**  
*Prereq: Acceptance into the Marine Semester.*  
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 Oct. 1 - Oct. 25
**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 a 12-day field trip to Belize.

*Lecture*

| MS  | Finnerty | Arranged | Nov. 21 - Dec. 20 |

**CAS BI 578: MARINE GEOGRAPHIC INFORMATION SCIENCE**

*Prereq: CAS BI 260 and CAS ES 145; 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.

*Lecture*

| MS  | Staff    | Arranged | Oct. 28 - Nov. 20 |

**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.

*Lecture*

| MS  | Davies   | Arranged | Oct. 28 - Nov. 20 |

**CAS BI 591: BIO-OPTICAL OCEANOGRAPHY**

*Prereq: 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. Also offered as CAS ES 591.

*Lecture*

| MS  | Fichot   | Arranged | Oct. 1 - Oct. 25 |

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**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.
The Tropical Ecology Program (TEP) is a fall and spring study abroad program in Quito, Ecuador. Students engage in intensive, field-based scientific investigation of Ecuador's vast and diverse ecosystems, from the Galápagos Islands to the Andean highlands to the Amazon basin. For more information, visit [www.bu.edu/biology/tep](http://www.bu.edu/biology/tep). All TEP courses count as lab electives toward the Biology, Behavioral Biology, and Ecology & Conservation Biology majors.

**CAS BI 438: TROPICAL MONTANE ECOLOGY**

Ecology of the montane zone of Ecuador including grassland, subalpine, and alpine scrub ecosystems. Examines the interrelationship of the flora and fauna of montane ecosystems, the exploitation of these environments for natural resources and agriculture, and the impending ecological consequences of such exploitation. Includes 15 hours of lecture presented during a two-week period, interspersed with several one- and two-day field trips to surrounding mountains. A total of two weeks is spent in the field. The field trips are dedicated to field activities and individual and group projects.

*Lecture*

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**CAS BI 440: TROPICAL COASTAL ECOLOGY**

Ecology of the coastal zone of Ecuador, including a survey of terrestrial and shallow marine ecosystems. Examines the interrelationship of the flora and fauna of coastal Ecuador, the exploitation of this environment for natural resources, and the impending ecological consequences of such exploitation. Includes 25 hours of lecture presented during a two-week period in Quito, followed by two weeks of intensive study along the coast of Ecuador. The field trips are dedicated to sampling and observation and both individual and group projects.

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**CAS BI 439: TROPICAL RAINFOREST ECOLOGY**

Ecology of the Ecuadorian rainforest including principles applied to the function of the tropical rainforest, using the Amazon basin as an example. Examines the interrelationship of the flora and fauna of the rainforest ecosystems, the exploitation of these environments for natural resources, and the impending ecological consequences of such exploitation. Includes 35 hours of lecture presented during a two-week period in Quito, followed by three weeks of intensive study in the Ecuadorian rainforest. Time in the field is dedicated to field activities, with exposure to different habitats and their respective flora and fauna. A series of directed individual research projects is completed in the field.

*Lecture*

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**CAS BI 441: STUDIES IN TROPICAL ECOLOGY**

Ecology of tropical Ecuador. A capstone course in tropical ecology that immediately follows the series of the three field-based courses: Tropical Rainforest Ecology, Tropical Montane Ecology, and Tropical Coastal Ecology. Focuses on the evaluation and statistical analysis of previous data collected in the field, extensive library research, and preparation of individual and group reports.

*Lecture*

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**MET 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 Muscedere Mon 6:00pm - 8:45pm  
Lab  
A2 Wed 6:00pm - 7:45pm

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

**Grading:** Three lecture exams (54%), lecture assignments and homework (11%), and laboratory exercises and exams (35%).

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**MET BI 107: BIOLOGY 1**  
*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 Lavalli Tue 6:00pm - 8:45pm  
**Lab**  
A2 Wed 6:00pm - 8:45pm

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

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**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**  
A2 Tullai Tue 6:00pm - 8:00pm Thu 6:00pm - 7:00pm  
**Discussion**  
A2 Thu 7:00pm - 8:00pm

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**MET BI 211: HUMAN PHYSIOLOGY**  
*Prereq: BI 105 or equivalent.*

**Not for Biology or BMB major/minor credit.** Designed for non-biology majors. Introduction to physiology. Principles of physiology with special reference to humans.

**Lecture**  
A1 Vyshedskiy Thu 6:00pm - 8:45pm  
**Lab**  
A2 Tue 6:00pm - 8:45pm

**Notes:** Not for Biology or BMB major/minor credit.

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**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 - 8:45pm  
**Lab**  
A2 Wed 6:00pm - 8:45pm
MET CH 421: BIOCHEMISTRY 1

Prereq: CAS CH 204, CH 212 or CH 214

Introductory biochemistry. Protein structure and folding, enzyme mechanisms, kinetics, and allostery; nucleic acid structure; lipids and membrane structure; bioenergetics; vitamins and coenzymes; introduction to intermediary metabolism. Students must register for two sections: lecture and laboratory.

Lecture
A2 Perlstein Tue, Thu 2:00pm - 3:15pm
Mon 5:45pm - 7:45pm*

*Timeslot reserved for exams

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

B8 Fri 6:30pm - 10:30pm
B9 Mon 2:30pm - 6:30pm
B2 Wed 6:30pm - 10:30pm
B4 Thu 8:00am - 12:00pm

Discussion
C1 Mon 12:20pm - 2:05pm
C2 Tue 3:30pm - 5:15pm
C3 Thu 9:00am - 10:45am

Notes: Meets with CAS BI 421.

MET BI 566: NEUROBIOLOGY OF CONSCIOUSNESS

Prereq: BI 108 or equivalent.

Your brain is a bizarre device, set in place through natural selection of your ancestors and your own experience. One thing that clearly separates your brain from the brain of any other non-human animal is the propensity of your brain for imagination and creativity. 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. This interdisciplinary class is intended for paleoanthropologists who want to learn neuroscience, psychologists who are interested in the question of the origin of language, biologists who are interested in the uniqueness of the human mind, neuroscientists who want an exposure to paleoanthropology and linguistics, philosophers fascinated by neurological basis of behavior and other students interested in an understanding of the mind of a man and the evolution of the brain.

Independent
A1 Vyshedskiy Wed 6:00pm - 8:45pm
CAS BI 191: UNDERGRADUATE RESEARCH IN BIOLOGY 1
Prereq: freshman standing, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for Biology major or minor credit. Laboratory research or field work under the supervision of a Biology faculty mentor. Research outside of 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 291: UNDERGRADUATE RESEARCH IN BIOLOGY 2
Prereq: sophomore standing, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for Biology major or minor credit. Laboratory research or field work under the supervision of a Biology faculty mentor. Research outside of 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 391: UNDERGRADUATE RESEARCH IN BIOLOGY 3
Prereq: junior standing, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 or 4 cr] Two-credit option not for Biology major or minor credit. Laboratory research or field work under the supervision of a Biology faculty mentor. Research outside of the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Up to two 4-credit research courses may be counted as electives and one of those can apply towards the three-lab requirement.

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

CAS BI 491: UNDERGRADUATE RESEARCH IN BIOLOGY 4
Prereq: junior or senior standing, consent of instructor (faculty research mentor/sponsor), and approved application.

Laboratory research or field work under the supervision of a Biology faculty sponsor. Research outside of the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Up to two 4-credit research courses may be counted as electives and one of those can apply towards the three-lab requirement.

Grading: Course grade is determined by laboratory/fieldwork performance and written report.

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.

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. Up to two 4-credit research courses may be counted as electives and one of those can apply towards the three-lab requirement.

Grading: Course grade is determined by laboratory/fieldwork performance, written thesis, and defense of the thesis before a committee of three Biology faculty members.

CAS BI 497: HONORS RESEARCH IN BIOLOGY SEMINAR
For students currently enrolled in or intending to apply to the Honors in Biology Program.

[2 cr] A research seminar for students in the Honors in Biology Program. Requirements include written assignments based on research seminars and a short seminar by the student on their independent research.

A1 Wasserman Arranged

Notes: A minimum grade of B+ is required to graduate with Honors in Biology.

Grading: Attendance, participation, and written and oral assignments.
READINGS IN BIOLOGY

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

CAS BI 171: READINGS IN BIOLOGY 1
Prereq: freshman standing, consent of instructor (Biology faculty mentor), and approved application.

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

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

[2 cr] Not for biology major or minor credit. Intensive library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member. May be taken as preparation for BI 401/402 or BI 491/492.

Grading: Individual discussions and/or a paper presentation may be required.
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* Marine Semester  
^ Tropical Ecology Program