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

COURSE NOTES:

Courses fulfilling breadth requirements:

Cell & Molecular (CM)
CAS BI 206 Genetics
CAS BI 216 Intensive Genetics

Ecology, Behavior & Evolution (EBE)
CAS BI 260 Marine Biology
CAS BI 303 Evolutionary Ecology
CAS BI 306 Biology of Global Change

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

Upper Level Lab Courses Offered Spring 2019:
CAS BB 522 Molecular Biology Lab
CAS BI 302 Vertebrate Zoology
CAS/MET BI 303 Evolutionary Ecology
CAS BI 306 Biology of Global Change
CAS/MET BI 315 Systems Physiology
CAS/MET BI/CH 422 Biochemistry 2
CAS BI 449 Neuroscience Design Lab
CAS BI 528 Biochemistry Lab 2
CAS BI Tropical Ecology Program Courses
CAS BI Undergrad. Research Courses (first 4-credit semester)

TABLE OF CONTENTS:

BMB Courses Pg. 2-3
Cell & Molecular Courses Pg. 4-8
Ecology, Behavior & Evolution Courses Pg. 9-13
Physiology & Neurobiology Courses Pg. 14-16
MET Biology Courses Pg. 17-18
Research & Readings Courses Pg. 19-20
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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.

• The following courses do not count toward the Biology or BMB major or minor:
  CAS BI 114 Human Infectious Diseases
  CAS BI 210 Human Anatomy
  CAS BI 582 Seminar in Biology
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 192: UNDERGRADUATE RESEARCH IN BMB1
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 292: UNDERGRADUATE RESEARCH IN BMB 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 392: UNDERGRADUATE RESEARCH IN BMB 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 is 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 492: UNDERGRADUATE RESEARCH IN BMB 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 402: 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 498: 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.

**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 592: 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.

Electives for the BMB major can be found in these sections:

- Cell & Molecular (pgs. 4-8)
- Physiology & Neurobiology (pgs. 14-16)
- 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 108: BIOLOGY 2
Prereq: High school biology and one semester college chemistry strongly recommended.

For students planning to major in the natural sciences and for premedical students. Required for biology majors. It is strongly recommended students complete CAS CH 101 (or equivalent) before this course. High school biology is assumed. Cell and molecular biology, Mendelian & molecular genetics, physiology, and neurobiology. Three hours lecture, three hours lab. Carries natural science divisional credit (with lab) in CAS. This course fulfills a single unit in each of the following BU Hub areas: Scientific Inquiry II, Quantitative Reasoning II, Teamwork/ Collaboration, Critical Thinking

Lecture
A1 Loechler, McCall Mon,Wed,Fri 10:10am - 11:00am
A2 Loechler, Tullai Mon,Wed,Fri 12:20pm - 1:10pm
A3 Spilios Mon,Wed,Fri 2:30pm - 3:20pm

Lab
B1 Mon 2:30pm - 5:15pm D4 Wed 2:30pm - 5:15pm
B2 Mon 2:30pm - 5:15pm D5 Wed 2:30pm - 5:15pm
B3 Mon 2:30pm - 5:15pm D6 Wed 2:30pm - 5:15pm
B4 Mon 6:30pm - 9:15pm D7 Wed 6:30pm - 9:15pm
B5 Mon 6:30pm - 9:15pm D8 Wed 6:30pm - 9:15pm
B6 Mon 6:30pm - 9:15pm E1 Thu 8:00am - 10:45am
C1 Tue 8:00am - 10:45am E2 Thu 8:00am - 10:45am
C2 Tue 8:00am - 10:45am E3 Thu 8:00am - 10:45am
C3 Tue 8:00am - 10:45am E4 Thu 12:30pm - 3:15pm
C4 Tue 12:30pm - 3:15pm E5 Thu 3:30pm - 6:15pm
C5 Tue 3:30pm - 6:15pm E6 Thu 3:30pm - 6:15pm
C6 Tue 3:30pm - 6:15pm E7 Thu 3:30pm - 6:15pm
C7 Tue 3:30pm - 6:15pm E8 Thu 6:30pm - 9:15pm
C8 Tue 6:30pm - 9:15pm F1 Fri 8:00am - 10:45am
D2 Wed 8:00am - 10:45am F2 Fri 8:00am - 10:45am
D3 Wed 8:00am - 10:45am

Notes: Meets with BI 116.


Grading: Four hourly exams, lecture 68%, lab 32%.

CAS BI 114: HUMAN INFECTIOUS DISEASES: AIDS TO TUBERCULOSIS
Prereq: None

Not for Biology major or minor credit. A study of the world's major human diseases, their causes, effects on history, pathology, and cures. Principles of immunology. Emphasis on present maladies such as AIDS, herpes, cancer, mononucleosis, tuberculosis, influenza, and hepatitis. This course is appropriate for non-majors and students in the health and paramedical sciences (Sargent College). Three hours lecture, three hours lab. Carries natural science divisional credit (with lab) in CAS. This course fulfills a single unit in the following BU Hub area(s): Scientific Inquiry I, Quantitative Reasoning II, Critical Thinking.

Lecture
A1 Co Mon,Wed,Fri 9:05am - 9:55am

Lab
B1 Mon,Wed 2:30pm - 4:15pm C3 Tue,Thu 3:30pm - 5:15pm
C1 Tue,Thu 9:00am - 10:45am D1 Mon,Wed 10:10am - 11:55am
C2 Tue,Thu 1:30pm - 3:15pm D2 Mon,Wed 12:20pm - 2:05pm

Notes: Not for Biology major or minor credit.

Textbooks & Technology: Microbiology Basic and Clinical Principles - Norman McKay, TopHat Account, ExamSoft Account.

Grading: 4 lecture exams; laboratory.

CAS BI 116: BIOLOGY 2 WITH ISE LAB
Prereq: CH 101
Coreq: CH 116

Integration of general chemistry with biology and neuroscience, with an emphasis on how each discipline interacts experimentally. Laboratory focuses on projects relating to enzymes and their function. 3 lecture hours (meets with CAS BI 108 lecture), 3 hours lab.

Lecture
A1 Loechler, McCall Mon,Wed,Fri 10:10am - 11:00am
A2 Loechler, Tullai Mon,Wed,Fri 12:20pm - 1:10pm
A3 Spilios Mon,Wed,Fri 2:30pm - 3:20pm

Lab
L1 Tue,Thu 6:30pm - 9:15pm L2 Wed, Fri 2:30pm - 5:15pm

Notes: Meets with BI 108 Lecture.


Grading: 4 lecture exams (52%), lecture homework (2%), in-lecture quizzes (4%), in-lecture TopHat questions (2%), lab (40%).
CAS BI 206: GENETICS

Prereq: CAS BI 108 and CAS CH 203 or equivalent

Principles of classical, molecular, and evolutionary genetics derived from analytical, molecular, and whole genome cytological evidence in animals, plants, and microorganisms. For BMB majors and Biology majors in the CMG track, BI 216 is highly recommended instead of BI 206. Three hours lecture, one hour discussion. Students may receive credit for CAS BI 206 or 216, but not both courses.

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

Discussion
- B1 Mon 12:20pm - 1:10pm
- B2 Mon 12:20pm - 1:10pm
- B3 Mon 1:25pm - 2:15pm
- B4 Mon 2:30pm - 3:20pm
- C1 Tue 8:00am - 8:50am

Notes: Meets with BI 282 and with BI 216 for the first half of the semester.


Grading: 80% avg. of four exam scores given during the semester. 20% discussion.

CAS BI 216: INTENSIVE GENETICS

Prereq: CAS BI 108 & BI 203 or equivalents to both, and CAS CH 203 or consent of instructor

Advanced alternative to CAS BI 206, emphasizing depth of coverage, class discussion, and reading research papers. BI 216 (instead of BI 206) is highly recommended for BMB majors and Biology majors in the CMG track. Principles of classical, molecular, and evolutionary genetics derived from analytical, molecular, and whole genome cytological evidence in animals, plants, and microorganisms. Three hours lecture, one hour discussion. Students may receive credit for CAS BI 216 or 206, but not both courses.

Lecture
- A1 Celenza, Loechler Tue, Thu 12:30pm - 1:45pm
- Thu 6:30pm - 8:15pm*

Discussion
- B1 Mon 12:20pm - 1:10pm
- B2 Mon 12:20pm - 1:10pm
- B3 Mon 1:25pm - 2:15pm
- B4 Mon 2:30pm - 3:20pm
- D1 Wed 8:00am - 8:50am
- D2 Wed 12:20pm - 1:10pm
- D3 Wed 1:25pm - 2:15pm
- D5 Wed 2:30pm - 3:20pm

Notes: Meets with BI 206/282 for the first half of the semester.


Grading: 80% avg. of four exam scores given during the semester. 20% discussion.
CAS BI 385: IMMUNOLOGY
Prereq: CAS BI 203, CAS BI 206 and junior standing

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

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

Discussion
B1 Tue 8:00am - 8:50am  F1 Tue 8:00am - 8:50am
C1 Wed 12:20pm - 1:10pm  G1 Wed 11:15am - 12:05pm
D1 Thu 8:00am - 8:50am  H1 Wed 12:20pm - 1:10pm
E1 Fri 2:30pm - 3:20pm  I1 Fri 3:35pm - 4:25pm


Grading: 3 exams (2 midterms and 1 final) 80%; discussion/participation 20%.

CAS BI 422: BIOCHEMISTRY 2
Prereq: CAS BI 421 or CAS CH 421 or equivalent

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

Lecture
A1 Kornberg Mon,Wed,Fri 9:05am - 9:55am

Lab & Discussion
B1 Mon 12:20pm - 4:20pm Lab  B2 Mon 5:30pm - 9:30pm Lab
B3 Wed 2:30pm - 6:30pm Lab  B4 Thu 5:30pm - 9:30pm Lab
B5 Fri 12:20pm - 4:20pm Lab  B6 Fri 5:30pm - 9:30pm Lab
C1 Fri 10:10am - 11:00am Discussion  C2 Fri 11:15am - 12:05pm Discussion
C3 Wed 12:20pm - 1:10pm Discussion

Notes: Meets with CAS CH 422 A1, GRS BI/CH 622 A1 and MET CH 422.


Grading: Hour exams, lab, final.

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.
**CAS BB 522: MOLECULAR BIOLOGY LAB**
*Prereq: CAS BI 552*

Introduction to techniques of cellular and molecular biology research, including analysis of DNA and protein molecules, by techniques such as plasmid isolation, restriction enzyme digestions, PCR, subcloning, DNA sequence analysis, reporter gene assays, mammalian cell culturing, immunofluorescence, yeast molecular biology, RNA isolation and quantification, RT-qPCR analysis and introduction to RNA-seq bioinformatic analysis.

**Lab**

A1 Gilmore, Cheng  
Tue,Thu  1:00pm - 4:45pm

**Notes:** Permission required.

**Textbooks & Technology:** Xeroxed lab note packet.

**Grading:** Midterm (20%); final (20%); lab reports (35%); lab participation and preparation (25%).

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**CAS BI 553: MOLECULAR BIOLOGY 2**
*Prereq: CAS BI 552, recommended: BI/CH 421/422*

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

**Independent**

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

**Textbooks & Technology:** none.

**Grading:** Two exams, discussion participation, project.

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**CAS BI 528: BIOCHEMISTRY LABORATORY 2**
*Prereq: BI 421 or BI 527*

[2 cr] Not for Biology major or minor credit unless both BI 527 and BI 528 are taken. Emphasizes protein, carbohydrate, nucleic acid, and lipid chemistry. Development and use of modern instrumentation and techniques. Same as CAS CH 528 and laboratory portion of CAS BI/CH 422. Required for BMB students enrolled concurrently in GMS BI 555.

**Lecture**

A1 Medrano  
Fri  10:10am - 11:00am

A2 Medrano  
Fri  11:15am - 12:05pm

A3 Medrano  
Wed  12:20pm - 1:10pm

**Lab**

B1 Mon  12:20pm - 4:20pm  
B4 Thu  5:30pm - 9:30pm

B2 Mon  5:30pm - 9:30pm  
B5 Fri  12:20pm - 4:20pm

B3 Wed  2:30pm - 6:30pm  
B6 Fri  5:30pm - 9:30pm

**Notes:** Meets with CAS CH 422, CAS BI 422, CAS CH 528, GRS CH 622 and GRS BI 622. Not for Biology major or minor credit unless both BI 527 and BI 528 are taken.

**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%.

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**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**

F1 Fuxman Bass  
Wed, Fri  10:10am - 11:55am

**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 576: CARCINOGENESIS**

Prereq: BI 203, BI 206, BI 552

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

**Lecture**

A1  Gilmore, Tullai  Mon  2:30pm - 4:15pm  
     Wed  2:30pm - 3:20pm

**Discussion**

B1  Wed  3:35pm - 4:25pm
B2  Wed  4:40pm - 5:30pm
B3  Thu  3:35pm - 4:25pm

**Notes:** No credit if CAS BI 327 or GMS BT 520 were taken previously.


**Grading:** Three exams, presentation, participation.

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**CAS BI 582: SEMINAR IN BIOLOGY: RESEARCH TOPICS IN FUNCTIONAL GENOMICS AND PROTEOMICS**

Prereq: BI 421 or BI 560 or BI 565 or consent of instructor

[2 cr] Not for Biology major or minor credit unless two sections of BI 581/582 are taken. This course will introduce experimental and computational strategies as pertains to the generation and analysis of large-scale proteomic and genomic data sets, including practical and project specific aspects (data formats, methods, public resources). Typical project goals and individual cases will be examined in detail in presentations by select faculty. Data types to be discussed may include expression data, molecular interaction, graphical network models, mass spectrometry, and structural biology. A session may also be devoted to methods for combining and leveraging among multiple data types.

**Independent**

E1  Emili  Fri  10:10am - 11:55am

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

**Textbooks & Technology:** PDFs of relevant publications will be provided along with website URLs to access relevant public databases.

**Grading:** Research project sketch (25 %), project sketch reviews (25 %), project sketch review rebuttals and revised proposal (25 %), class participation/attendance (25%).

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

Ecology, Behavior & Evolution (pgs. 9-13)
Physiology & Neurobiology (pgs. 14-16)
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 260: MARINE BIOLOGY

Prereq: CAS BI 107 or consent of instructor.


Lecture
A1 Rotjan Mon,Wed,Fri 9:05am - 9:55am

Discussion
B1 Wed 10:10am - 11:00am C3 Tue 3:35pm - 4:25pm
B2 Wed 4:40pm - 5:30pm E1 Thu 11:15am - 12:05pm
C1 Thu 3:35pm - 4:25pm F1 Fri 11:15am - 12:05pm
C2 Tue 11:15am - 12:05pm F2 Fri 10:10am - 11:00am

Textbooks & Technology: Castro & Huber. Marine Biology. 9th Edition

Grading: Three exams, discussion, and participation.

CAS BI 303: ECOLOGY

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

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

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

Lab
B1 Mon 2:30pm - 5:15pm
C1 Tue 3:30pm - 6:15pm
D1 Thu 12:30pm - 3:15pm
F1 Fri 2:30pm - 5:15pm

Textbooks & Technology: Molles. Ecology. 6th Edition

Grading: Two exams, a final exam, lab, 3-minute video assignment, and participation.

CAS BI 302: VERTEBRATE ZOOLOGY

Prereq: CAS BI 107

Methods and principles of comparative vertebrate zoology. Phylogeny, natural history, adaptation, and taxonomy. Laboratory emphasis on correlation among structural, physiological, and evolutionary features of selected vertebrates by both dissection and experimentation. Field trips.

Lecture
A1 Wasserman Tue,Thur 11:00am - 12:15pm

Lab
B1 Tue,Thur 8:00am - 10:45am
B2 Tue,Thur 12:30pm - 3:15pm


Grading: Three exams, lab quizzes and participation.

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 the Earth's climate and terrestrial and aquatic ecosystems. Climate change, productivity and land-atmosphere feedbacks.

Lecture
A1 Finzi Mon,Wed,Fri 10:10am - 11:00am

Lab
C1 Tue 12:30pm - 3:15pm E1 Thu 3:30pm - 6:15pm
D1 Wed 2:30pm - 5:15pm

Textbooks & Technology: There is no required textbook for this course. Readings will be assigned from the scientific literature and will be available through Blackboard.

Grading: Two exams (20%), final exam (30%), lab and participation (30%).
CAS BI 307: BIOGEOGRAPHY  
*Prereq: GE 101 and BI 107*

Examines the spatial distribution of plants and animals from historical, ecological, and analytical perspectives. Environmental and human influences on species distribution, abundance, and diversity are considered, as are changes resulting from past and projected climate change.

**Independent**

A1  Staff  Tue  3:30pm - 6:15pm

**Notes:** Meets with GE 307.

**Textbooks & Technology:** TBA.

**Grading:** TBA.

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CAS BI 413: MICROBIAL ECOLOGY  
*Prereq: BI 107 & BI 108 and CH 101 & CH 102*

Microbes (bacteria, archaea, and fungi) are the most diverse and abundant living organisms on the planet and microbial communities are key contributors to ecosystems and their functioning. This course studies how microbes interact with each other and with the environment. Topics will include microbial cell structure and physiology, microbe-microbe interactions including biofilm formation and quorum sensing, and microbe-environment interactions including microbiomes and geochemical cycling.

**Lecture and Discussion**

A1  Angell  Tue, Thu  3:30pm - 4:45pm  
Fri  3:35pm - 4:25pm

**Notes:** Meets with GRS BI 613.


**Grading:** Two exams (15%), final paper (25%), homework (15%), discussion participation and presentation (30%).

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CAS BI 414: ORNITHOLOGY  
*Prereq: BI 107*

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

**Independent**

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

**Notes:** Meets with GRS BI 614.

**Textbooks & Technology:** none

**Grading:** 3 exams (each worth 1/3 of the grade).

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CAS BI 423: MARINE BIOGEOCHEMISTRY  
*Prereq: CAS ES 144 and (CH 102 or Marine Semester).*

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

**Independent**

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

**Notes:** Meets with GRS BI 623 and ES 423/623.

**Textbooks & Technology:** All readings will come from the primary literature and will be posted on Blackboard Learn.

**Grading:** Exams, class presentations, and participation in weekly literature journals and discussions.
CAS BI 475: URBAN ECOLOGY
Prereq: (GE 100 or GE 101) and one of the following: CAS BI 306, CAS BI 443, CAS GE 456, or CAS BI 530; or consent of instructor.

The biophysical environments and ecology of urban settlements. Key topics include the physical environment, patterns in human population growth and development, ecosystem structure and function, global change, urban environment pollution and management, and sustainable urban development.

Independent
A1  Hutyra  Wed  2:30pm - 5:15pm

Notes: Meets with CAS GE 475 and GRS BI/GE 675.

Textbooks & Technology: TBA
Grading: TBA

CAS BI 504: ADVANCED EVOLUTIONARY ANALYSIS
Prereq: CAS BI 309 or consent of instructor

Modern concepts, controversies, and analytical approaches in evolutionary biology. Topics include adaptation, natural and sexual selection, species and species formation, phylogenetics, origin of evolutionary novelty, adaptive radiation, basic population and quantitative genetics, development and evolution. Three hours lecture, one hour discussion.

Lecture and Discussion
A1  Mullen  Mon, Wed, Fri  1:25pm - 2:15pm
    Mon  2:30pm - 3:20pm

Textbooks & Technology: Readings will be available through Blackboard.
Grading: Midterm Exams (50%); Discussion (25%); Paper (25%)

CAS BI 506: PHENOTYPIC PLASTICITY
Prereq: CAS BI 107 and and one of the following: BI 303, BI 309, BI 315, or BI 410; or consent of instructor.

Explores the flexible phenotype as a product of development and target of natural selection, and addresses the role of plasticity in ecological interactions and evolutionary diversity. Topics: plasticity genetics, evolution, developmental mechanisms, functional ecology, learning, and diversification of life. Three hours lecture, one hour discussion.

Lecture
A1  Warkentin  Mon, Wed, Fri  9:05am - 9:55am

Discussion
B1  Wed  10:10am - 11:00am
B2  Wed  11:15am - 12:05pm

Textbooks & Technology: Gibert & Epel, Ecological Developmental Biology (2nd edition 2015), West-Eberhard Developmental Plasticity and Evolution, 2003, Papers from the scientific literature and chapters from other books posted on the course website.

Grading: Midterm and final exam, multi-stage project, participation.

CAS BI 530: FOREST ECOLOGY
Prereq: CAS BI 107 and (CAS BI 303 or CAS BI 306); or consent of instructor

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

Lecture and Discussion
A1  Templer  Tue, Thu  11:00am - 12:15pm
    Fri  10:10am - 11:00am

Notes: Meets with GE 530.

Grading: Two exams (40%), Class assignments (55%), Class participation (5%)
CAS BI 542: NEUROETHOLOGY
Prereq: CAS BI 315 or CAS NE 203, or consent of instructor.
An in-depth study of the neural mechanisms underlying natural behaviors in animals, integrating perspectives from behavioral ecology and neurobiology. Behaviors that are central to fitness will be studied in detail, including the sensory and motor bases of prey detection, predator avoidance, communication, courtship, navigation, and migration. A wide variety of non-model organisms such as honey bees, owls, bats, and crickets will be discussed. Lectures are integrated with student-led discussions of relevant research papers.

Independent
A1 Muscedere Tue, Thu 9:00am - 10:45am

Notes: Meets with CAS NE 542.


Grading: Exams, class presentations, and participation in daily literature discussions.

CAS BI 582: SEMINAR IN BIOLOGY: PLANT ECOLOGY AND IDENTIFICATION
Prereq: BI 303 or BI 306 (or equivalent)
[2 cr] Not for Biology major or minor credit unless two sections of BI 581/582 are taken. This course will cover topics in plant ecology, including plant population biology, plant community ecology, and plant succession. The course will include topics in plant reproductive ecology, such as pollination ecology and seed dispersal ecology, and plant-animal interactions, such as plant defenses against herbivory and plant interactions with birds and mammals. The ecological roles of different plant groups, such as mosses, ferns, flowering plants, and gymnosperms, will be included. The course will teach the skills need to identify the common trees, shrubs, and wildflowers found in New England habitats, and include the use of on-line identification resources, such as Go Botany and iNaturalist.

Independent
P1 Primack Tue 9:00am - 10:45am

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

Textbooks & Technology: Course readings will be from The Ecology of Plants, Second Edition, by Jessica Gurevitch; research papers from the current literature; Newcomb's Wildflower Guide; and on-line guides for plant identification, including Go Botany and iNaturalist.

Grading: Grading will be based on class participation, class presentations, course papers, and quizzes on plant identification.

CAS BI 582: SEMINAR IN BIOLOGY: COMMUNITY ECOLOGY
Prereq: BI 107 and senior standing (or consent of instructor). Some background in ecology and/or evolution recommended.
[2 cr] Not for Biology major or minor credit unless two sections of BI 581/582 are taken. The objective of this course is to introduce students to concepts in Community Ecology, including patterns and mechanisms of community assembly, models of species interaction, and causes and consequences of diversity. The course is a seminar-style course in which students learn and teach concepts in community ecology in a self-directed way. A major objective of the course will be to prepare a synthetic term paper on a topic in community ecology, to which all students will contribute a section.

Independent
B1 Bhatnagar Fri 12:20pm - 2:05pm

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

Textbooks & Technology: none

Grading: attendance 15%; presentation and participation 15%; content and clarity of presentation 35%; term paper written and revised 35%.
ECOLOGY, BEHAVIOR & EVOLUTION

CAS BI 594: TOPICS IN BIOLOGY: ECOLOGICAL AND EVOLUTIONARY GENOMICS

Prereq: BI 206 and (MA 115 or MA 213); recommended: BI 309 or BI 303; or consent of instructor

The onset of next generation sequencing technologies has changed the way we address questions in ecology and evolution. Ecological and evolutionary genomics is a relatively new and powerful field that capitalizes on these advancements and aims to address ecological and evolutionary questions through a genomic lens. This course will teach a panel of genomics methods that have been developed specifically for addressing these sorts of long-standing questions in non-model organisms. This course will navigate students through topics related to community ecology, population biology and organismal physiology and lectures and readings will be integrated with genomic analyses and statistics. The majority of the genomic problems tackled in the class will be using marine invertebrates, however these tools are universal across microbes, fungi, plant and animals, and many will be applicable to your own species of interest. This course is intended for those interested in embarking on genomics within an ecological or evolutionary setting and teaches the fundamentals of the discipline, while concentrating on the skills required to address these questions.

Textbooks & Technology: Electronic hand-outs will be distributed throughout the course

Grading: Bioinformatic labs: 45%, literature discussion: 25%, final research project: 30%

Independent

D1  Davies  Tue, Thu  9:00am - 10:45am

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

Cell & Molecular (pgs. 4-8)
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. 14-16)
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 210: HUMAN ANATOMY**  
*Prereq: CAS BI 105 or equivalent*

**Not for Biology major or minor credit.** Intensive pre-professional course for students whose programs require anatomy. Gross structure of the human body; skeletal, muscular, nervous, respiratory, circulatory, digestive, urinary, and reproductive systems. Lab requires dissection. Carries natural science divisional credit (with lab) in CAS.

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

**Lab**  
B1  Mon  12:20pm - 2:05pm  
E1  Thu  9:00am- 10:45am  
B2  Mon  2:30pm - 4:15pm  
E2  Thu  1:30pm - 3:15pm  
C1  Tue  9:00am - 10:45am  
E3  Thu  3:30pm - 5:15pm  
C2  Tue  1:30pm - 3:15pm  
F1  Fri  12:20pm - 2:05pm  
C3  Tue  3:30pm - 5:15pm  
F2  Fri  2:30pm - 4:15pm

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

**Textbooks & Technology:** *Human Anatomy* - Marieb, TopHat Account, ExamSoft Account.

**Grading:** Three midterm lecture exams; 1 cumulative lecture final; 2 laboratory practical exams.

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**CAS BI 230: BEHAVIORAL ENDOCRINOLOGY**  
*Prereq: (BI 108 or NE 102) and sophomore standing.*

Hormonal control of reproductive and parental behaviors, social affiliation, aggression, fluid homeostasis, biological rhythms including seasonal reproduction, stress, learning and memory, affective disorders and steroid abuse.

**Lecture and Discussion**  
A1  DiBenedictis  Mon, Wed, Fri  2:30pm - 3:20pm  
Fri  1:25pm - 2:15pm

**Notes:** Meets with NE 230.


**Grading:** Two midterms (20% each), a final exam (30%), discussion presentation and participation (20%), quizzes (10%).

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**CAS BI 315: SYSTEMS PHYSIOLOGY**  
*Prereq: (CAS BI 108 or ENG BE 209) 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  Tue,Thu  11:00am - 12:15pm  
A2  Muscedere  Tue, Thu  2:00pm - 3:15pm

**Lab**  
B1  Mon  2:30pm - 5:15pm  
D3  Wed  2:30pm - 5:15pm  
B2  Mon  6:30pm - 9:15pm  
D4  Wed  6:30pm - 9:15pm  
C1  Tue  8:00am - 10:45am  
E1  Thu  8:00am - 10:45am  
C2  Tue  12:30pm - 3:15pm  
E2  Thu  12:30pm - 3:15pm  
C3  Mon  2:30pm - 5:15pm  
E3  Thu  6:30pm - 9:15pm  
C4  Tue  6:30pm - 9:15pm  
E4  Thu  6:30pm - 9:15pm  
C5  Tue  6:30pm - 9:15pm  
E5  Mon  6:30pm - 9:15pm

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


**Grading:** Three lecture exams, lecture assignments and homework, final exam, lab quizzes and write ups, cumulative lab final.

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**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  Cruz-Martin  Tue,Thu  2:00pm - 3:15pm

**Discussion**  
B1  Mon  2:30pm - 3:20pm  
B2  Wed  3:35pm - 4:25pm  
B3  Thu  3:35pm - 4:25pm


**Grading:** Two midterms and a final exam.
CAS BI 394: TOPICS IN BIOLOGY: NEUROTOXINS IN BIOLOGY, MEDICINE, AGRICULTURE AND WAR
Prereq: BI108 or equivalent

In this course, we will use neurotoxins as a lens through which to learn neurobiology and physiology. Since most neurotoxins target synapses or ion channels, we will discuss the basic principles related to key steps of synaptic transmission and action potential generation. In the area of biology, we will discuss the toxin components of some venomous animals and discuss how these components are tailored to their specific hunting style. In medicine, we will seek to understand how the actions of certain neurotoxins have led to applications such as pain management or prevention of excitotoxicity. In the field of agriculture, we will study how the majority of pesticides are neurotoxins. Lastly, we will examine how neurotoxins have a long history of use as a tool to gain power during war times.

Independent
A1 Lin Tue,Thu 3:30pm - 5:15pm

Textbooks & Technology: Neuroscience, 4th or 5th ed; Purves, et al. or Neuroscience: Exploring the Brain. Bear, Connors and Paradiso 4th ed

Grading: 1 midterm (30%), 1 final (40%), discussion/presentation (30%)

CAS BI 449: NEUROSCIENCE DESIGN LAB
Prereq: (BI 315 OR BI 325 OR NE 203) or consent of instructor.

Design and build devices for neuroscience experiments. Interface sensors with computers using Arduino microprocessors. Guided exercises followed by independent design projects to quantify human sensory and motor performance, or emulate animal sensory-motor circuits. All levels of programming experience accepted.

Lab
A1 Gavornik Tue,Thu 12:30pm- 3:15pm

Notes: Meets with CAS NE 449 and GRS BI/NE 649.

Textbooks & Technology: Purchase of an Arduino kit.

Grading: Lab notebook, project and participation.

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.

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, Wed, Fri 9:05am - 9:55am
Wed 10:10am - 11:00am

Notes: Meets with CAS 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 394: TOPICS IN BIOLOGY: NEUROTOXINS IN BIOLOGY, MEDICINE, AGRICULTURE AND WAR
Prereq: BI108 or equivalent

In this course, we will use neurotoxins as a lens through which to learn neurobiology and physiology. Since most neurotoxins target synapses or ion channels, we will discuss the basic principles related to key steps of synaptic transmission and action potential generation. In the area of biology, we will discuss the toxin components of some venomous animals and discuss how these components are tailored to their specific hunting style. In medicine, we will seek to understand how the actions of certain neurotoxins have led to applications such as pain management or prevention of excitotoxicity. In the field of agriculture, we will study how the majority of pesticides are neurotoxins. Lastly, we will examine how neurotoxins have a long history of use as a tool to gain power during war times.

Independent
A1 Lin Tue,Thu 3:30pm - 5:15pm

Textbooks & Technology: Neuroscience, 4th or 5th ed; Purves, et al. or Neuroscience: Exploring the Brain. Bear, Connors and Paradiso 4th ed

Grading: 1 midterm (30%), 1 final (40%), discussion/presentation (30%)

CAS BI 449: NEUROSCIENCE DESIGN LAB
Prereq: (BI 315 OR BI 325 OR NE 203) or consent of instructor.

Design and build devices for neuroscience experiments. Interface sensors with computers using Arduino microprocessors. Guided exercises followed by independent design projects to quantify human sensory and motor performance, or emulate animal sensory-motor circuits. All levels of programming experience accepted.

Lab
A1 Gavornik Tue,Thu 12:30pm- 3:15pm

Notes: Meets with CAS NE 449 and GRS BI/NE 649.

Textbooks & Technology: Purchase of an Arduino kit.

Grading: Lab notebook, project and participation.
CAS BI 542: NEUROETHOLOGY
Prereq: CAS BI 315 or CAS NE 203, or consent of instructor.

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

Independent
A1 Muscedere  Tue,Thu  9:00am - 10:45am

Notes: Also offered as CAS NE 542.


Grading: Exams, class presentations, and participation in daily literature discussions.

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

Cell & Molecular (pgs. 4-8)
Ecology, Behavior & Evolution (pgs. 9-13)
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.
MET BI 108: BIOLOGY 2
Prereq: One year of high school biology and chemistry strongly recommended.
Coreq: CH 101 and CH 102 recommended as prereqs or coreqs.
For pre-med students and students who plan to major in the natural sciences. Required for Biology majors. Course examines cells, genetics, development, physiology, and neurobiology.
Lecture
B1 Tullai Tue 6:00pm - 8:45pm
Lab
C1 Spilios Wed 6:00pm - 8:45pm

MET BI 206: GENETICS
Prereq: BI 108 or equivalent; CH 203 recommended.
Principles of heredity as derived from genetic, biochemical, and cytological evidence in animals, plants, and microorganisms. For BMB majors and Biology majors in the CMG track, BI 216 is highly recommended instead of BI 206.
Lecture and Discussion
B1 Celenza Tue, Thu 6:00pm - 7:30pm
Tue 7:30pm - 8:30pm

MET BI 210: HUMAN ANATOMY
Prereq: BI 105
Not for Biology or BMB major/minor credit. Gross structure of the human body: skeletal, muscular, nervous, respiratory, circulatory, digestive, urinary, and reproductive systems. Laboratory course.
Lecture
C1 Kieswetter Wed 6:00pm - 8:45pm
Lab
D1 Taylor Thu 6:00pm - 8:45pm
Notes: Not for Biology or BMB major credit.

MET BI 303: ECOLOGY
Prereq: BI 107
Basic principles of ecology, population dynamics and behavior, interrelationships of plants and animals and their physical and chemical environment. Structure and function of ecosystems and community dynamics. Laboratory course.
Lecture
A1 Wasserman Mon 6:00pm - 8:45pm
Lab
C1 Wasserman Wed 6:00pm - 8:45pm

MET BI 315: SYSTEMS PHYSIOLOGY
Prereq: BI 108 & BI 203
An introduction to the basic physiological principles applied across all levels of organization (cell, tissue, organ system) and intended to prepare the student for more advanced courses in physiology. Topics include homeostasis, neural, muscle, cardiopulmonary, renal, endocrine, and reproductive physiology.
Lecture
D1 Vyshedskiy Thu 6:00pm - 8:45pm
Lab
C1 Vyshedskiy Wed 6:00pm - 8:45pm
Notes: Permission required for non-MET students.
**MET CH 422: BIOCHEMISTRY 2**
*Prereq: BI/CH 421 or equivalent.*

Polysaccharides, energy storage and recognition; intermediary metabolism; lipid and isoprene metabolism; nitrogen metabolism; nucleotide metabolism, macromolecular biosynthesis with emphasis on specificity and fidelity in the mechanisms of RNA, DNA, and protein synthesis. Three hours lecture, one hour discussion, four hours lab.

**Lecture**
- A1  Kornberg  Mon, Wed, Fri  9:05am - 9:55am

**Lab**
- B2  Mon  5:30pm - 9:30pm
- B4  Thu  5:30pm - 9:30pm
- B6  Fri  5:30pm - 9:30pm

**Discussion**
- C1  Fri  10:10am - 11:00am
- C2  Fri  11:15am - 12:05pm
- C3  Wed  12:20pm - 1:10pm

**Notes:** Meets with CAS BI 422.

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**MET BI 566: NEUROBIOLOGY OF CONSCIOUSNESS AND EVOLUTION OF LANGUAGE**
*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.

**Independent**
- C1  Vyshedsakiy  Wed  6:00pm - 8:45pm
**CAS BI 192: 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 292: 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 392: 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 492: 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 402: 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.

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 498: HONORS RESEARCH IN BIOLOGY SEMINAR**
Prereq: 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 written assignments based on research topics in the seminar are required to graduate with departmental honors.

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

Grading: Attendance and written 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](http://www.bu.edu/biology/forms). These courses are often used as preparation for Undergraduate Research in Biology or Honors Research in Biology.

## CAS BI 172: READINGS IN BIOLOGY 1

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

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

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

## CAS BI 272: READINGS IN BIOLOGY 2

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

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

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

## CAS BI 372: READINGS IN BIOLOGY 3

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

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

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

## CAS BI 472: READINGS IN BIOLOGY 4

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

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

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