

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

BIOCHEMISTRY & MOLECULAR 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 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.

BIOCHEMISTRY & MOLECULAR BIOLOGY

HONORS RESEARCH IN BMB

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

CAS BB 401: HONORS RESEARCH IN 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.

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.

CELL & MOLECULAR

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
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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).

Textbooks & Technology: Brooker, Widmaier, Graham, and Stiling, *Principles of Biology*, 2nd ed., McGraw-Hill, 2018.

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.

Textbook & Technology: Lewis, R., *Human Genetics Concepts and Applications*, 12th ed., McGraw Hill, 2018. Relevant course content will be posted on Blackboard.

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

Hub Units: Scientific Inquiry I.

CELL & MOLECULAR

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.

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

CAS BI 213: INTENSIVE CELL BIOLOGY

Prereq: CAS BI 108 and CAS CH 102 or equivalent.

Coreq: CAS CH 203 or equivalent.

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

Lecture

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

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

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

Textbook & Technology: Cooper and Hausman, *The Cell: A Molecular Approach*, 7th ed., Sinauer Associates, 2015

Grading: Two midterms, final exam, and discussion.

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

CELL & MOLECULAR

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 Mon	9:30am - 10:45am 6:30pm - 8:00pm
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Meets with BI 203 A1. Monday evening timeslot reserved for exams.

A2	Beffert	Tue, Thu Mon	3:30pm - 4:45pm 6:30pm - 8:00pm
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Meets with BI 203 A2. Monday evening timeslot reserved for exams.

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

Discussion

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

L1	Spilios	Wed.	12:20pm - 4:20pm
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Prelab

P1	Pastorino	Mon	2:30pm - 4:15pm
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Textbooks & Technology: Cooper and Hausman, *The Cell: A Molecular Approach*, 7th ed., Sinauer Associates, 2015

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

Hub Units: Scientific Inquiry II, Quantitative Reasoning II, Teamwork/Collaboration, Writing-Intensive Course

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

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

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
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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

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

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

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.

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 allostery; 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 6:30pm - 8:30pm*

*Timeslot reserved for exams

Lab

B1 Wed 8:00am - 12:00pm B8 Fri 6:30pm - 10:30pm

B2 Wed 1:25pm - 5:25pm B9 Mon 2:30pm - 6:30pm

B3 Wed 6:30pm - 10:30pm

B4 Thu 8:00am - 12:00pm

Discussion

C1 Mon 12:20pm - 2:05pm C3 Thu 9:00am - 10:45am

C2 Tue 3:30pm - 5:15pm

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

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

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

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.

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.

Textbooks & Technology: Tolan, *Biochemistry Laboratory Manual*, 3rd Ed., 2013.

Grading: Lab notebook, reports, attendance, safety, and participation.

CELL & MOLECULAR

CAS BI 551: BIOLOGY OF STEM CELLS

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

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

Lecture and Discussion

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

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

Grading: Midterm, final, presentation, and participation.

CAS BI 552: MOLECULAR BIOLOGY 1

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

How cells synthesize biologically important macromolecules (DNA, RNA and proteins), as well as their structure, function and regulation. Both prokaryotic and eukaryotic molecular biology are discussed. Topics include: DNA replication, DNA repair, recombination, prokaryotic transcription, translation, eukaryotic transcription/RNA processing, DNaseI hypersensitive sites, 5-methylcytosine, eukaryotic RNA polymerase structure/CTD modification, eukaryotic promoter structure, general transcription factors, enhancer-promoter loops, histone modification/chromatin remodeling, 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%).

CAS BI 560: SYSTEMS BIOLOGY

Prereq: CAS BI 552 or consent of the instructor.

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

Lecture and Discussion

A1	Siggers	Mon, Wed, Fri	11:15am - 12:05pm
		Wed	12:20pm - 1:10pm

Textbooks & Technology: Course readings provided via Blackboard.

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

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
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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%).

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/cm-g-bulletin.

ECOLOGY, BEHAVIOR & EVOLUTION

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, Spiliotis, Wasserman Tue, Thu 12:30pm - 1:45pm

A2 Mullen, Spiliotis, 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 BI107 and CAS BI108)

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

Lecture

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

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

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

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

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

ECOLOGY, BEHAVIOR & EVOLUTION

CAS BI 309: EVOLUTION

Prereq: CAS BI 107 and CAS BI 108 or equivalent.

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

Lecture

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

Discussion

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

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

Grading: 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 or equivalent.

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.

Textbooks & Technology: Primack, *Essentials of Conservation Biology*, 6th ed., 2017

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.

PHYSIOLOGY & NEUROBIOLOGY

CAS BI 211: HUMAN PHYSIOLOGY

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

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

Lecture

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

Lab

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

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

Textbooks & Technology: Sherwood, *Fundamentals of Human Physiology*, 4th ed., Brooks Cole, 2011; Seliga *et al.*, *Human Physiology Lab Manual*, 3rd ed.

Grading: Lecture (70%: 3 midterm exams, 1 cumulative final, small assignments); Lab (30%: 2 lab exams and assignments).

Hub Units: Scientific Inquiry II, Critical Thinking, Teamwork/ Collaboration, Writing-Intensive Course

CAS BI 310: HUMAN STRUCTURE & FUNCTION

Prereq: CAS BI 108 & CAS BI 203.

Examines the structure of the body (anatomy) using a systems approach. Looks at the structure of cells and tissues (histology) and explores how they make up the body's organs/organ systems. Examines how disease reshapes the human body and tissues (pathology).

Lecture

A1 Staff Mon, Wed, Fri 12:20pm - 1:10pm

Lab

B1 Tue 3:30pm - 6:15pm

Textbooks & Technology: Saladin, *Human Anatomy*, 5th ed., McGraw-Hill, 2017; Visible Body Virtual Dissection App; Co, *Anatomy Course Manual*

Grading: Exams (50%: 2 midterms + 1 cumulative final), Weekly lab quizzes (17%), Homework (15%), classwork and small assignments (18%).

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

CAS BI 315: SYSTEMS PHYSIOLOGY

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

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

Lecture

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

Lab

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

Textbooks & Technology: Widmaier *et al.*, *Vander's Human Physiology: The Mechanisms of Body Function*, 15th ed., McGraw-Hill, 2013; Seliga *et al.*, *Systems Physiology Lab Manual*, 3rd ed.

Grading: Lecture (70%: 3 midterm exams, 1 cumulative final, small assignments); Lab (30%: 1 lab exam and assignments).

Hub Units: Scientific Inquiry II, Writing-Intensive Course, Critical Thinking

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.

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

Grading: Texts, quizzes, and participation.

Hub Units: Scientific Inquiry II, Critical Thinking

PHYSIOLOGY & NEUROBIOLOGY

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.

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

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

CAS BI 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.

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

Grading: One midterm and one final exam.

CAS BI 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 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%).

PHYSIOLOGY & NEUROBIOLOGY

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
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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 598: NEURAL CIRCUITS

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

This course reviews modern techniques and toolsets 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
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Notes: Meets with NE 598.

Textbooks & Technology: None.

Grading: Presentations and discussion.

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.

MARINE SEMESTER

The BU Marine Semester is a fall semester study abroad program consisting of month-long, research-oriented marine courses, chosen from a set of diverse course offerings. Courses take place on campus in BU's Marine Research Teaching Lab and off campus at field sites in New England and Belize (Central America). For more information, visit www.bu.edu/biology/ms. 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

MARINE SEMESTER

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 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

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

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.

TROPICAL ECOLOGY PROGRAM

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. 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

EQT Staff Arranged Aug. - Dec.

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.

Lecture

EQT Staff Arranged Aug. - Dec.

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

EQT Staff Arranged Aug. - Dec.

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

EQT Staff Arranged Aug. - Dec.

METROPOLITAN COLLEGE (MET)

Metropolitan College (MET) offers evening versions of several biology courses, often taught by Biology Department faculty. The MET courses listed here count toward a student's major the same way the corresponding CAS courses do (although MET courses don't earn Hub units). If a student wishes to take more than one MET course a semester or is a freshman or sophomore, it is first necessary to get approval by filling out the Petition to Take Course at Metropolitan College form at www.bu.edu/biology/met-petition.

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%).

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.

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

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.

MET BI 407: ANIMAL BEHAVIOR

Prereq: CAS BI 107 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

METROPOLITAN COLLEGE (MET)

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.

Lecture

A1	Tolan	Mon	8:00am - 8:50am
		Mon, Wed, Fri	9:05am - 9:55am
A2	Perlstein	Tue, Thu	2:00pm - 3:15pm
		Mon	6:30pm - 8:30pm*

*Timeslot reserved for exams

Lab

B1	Wed	8:00am - 12:00pm	B8	Fri	6:30pm - 10:30pm
B2	Wed	1:25pm - 5:25pm	B9	Mon	2:30pm - 6:30pm
B3	Wed	6:30pm - 10:30pm			
B4	Thu	8:00am - 12:00pm			

Discussion

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

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
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RESEARCH & READINGS

UNDERGRADUATE RESEARCH IN BIOLOGY

Undergraduate Research in Biology courses (CAS BI 191 - CAS BI 491) require an online application. For more information on research requirements and to apply, visit www.bu.edu/biology/research-credit. Time commitment is a minimum of 6 hours a week for 2-credit research and 12 hours a week for 4-credit research.

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.

RESEARCH & READINGS

READINGS IN BIOLOGY

Readings in Biology offers students the opportunity to do library research on a chosen topic in the biological sciences. Students must ask a Biology faculty member familiar with the topic to be their sponsor and submit the application found at www.bu.edu/biology/forms. 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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BB 391	Undergraduate Research in BMB 3	Pg. 2
BB 401	Honors Research in BMB	Pg. 3
BB 491	Undergraduate Research in BMB 4	Pg. 2
BB 497	Honors Research in BMB Seminar	Pg. 3
BB 591	Graduate Research in BMB	Pg. 3
BI 105	Introductory Biology for Health Sciences	Pg. 4
BI 107	Biology 1	Pg. 9
BI 171	Readings in Biology 1	Pg. 20
BI 191	Undergraduate Research in Biology 1	Pg. 19
BI 194	Topics in Biology: Human Genetics	Pg. 4
BI 203	Cell Biology	Pg. 5
BI 211	Human Physiology	Pg. 11
BI 213	Intensive Cell Biology	Pg. 5
BI 218	Cell Biology with ISE 2 Lab	Pg. 6
BI 225	Behavioral Biology	Pg. 9
BI 271	Readings in Biology 2	Pg. 20
BI 281	Fundamentals of Biology 1	Pg. 6
BI 291	Undergraduate Research in Biology 2	Pg. 19
BI 305	Plant Biology	Pg. 9
BI 306	Biology of Global Change	Pg. 9
BI 309	Evolution	Pg. 10
BI 310	Human Structure & Function	Pg. 11
BI 311	General Microbiology	Pg. 6
BI 315	Systems Physiology	Pg. 11
BI 325	Principles of Neuroscience	Pg. 11
BI 371	Readings in Biology 3	Pg. 20
BI 391	Undergraduate Research in Biology 3	Pg. 19
BI 401	Honors Research in Biology	Pg. 19
BI 407	Animal Behavior	Pg. 10
BI 410	Developmental Biology	Pg. 7
BI 421	Biochemistry 1	Pg. 7
BI 438	Tropical Montane Ecology [^]	Pg. 16
BI 439	Tropical Rainforest Ecology [^]	Pg. 16
BI 440	Tropical Coastal Ecology [^]	Pg. 16
BI 441	Studies in Tropical Ecology [^]	Pg. 16
BI 445	Cellular and Molecular Neurophysiology	Pg. 12
BI 448	Biodiversity and Conservation Biology	Pg. 10
BI 455	Developmental Neurobiology	Pg. 12
BI 471	Readings in Biology 4	Pg. 20
BI 491	Undergraduate Research in Biology 4	Pg. 19

CAS (cont.)

BI 497	Honors Research in Biology Seminar	Pg. 19
BI 513	Genetics Lab	Pg. 7
BI 525	Biology of Neurodegenerative Diseases	Pg. 12
BI 527	Biochemistry Lab 1	Pg. 7
BI 531	Ichthyology*	Pg. 14
BI 535	Translational Research in Alzheimer's Disease	Pg. 13
BI 539	Coral Reef Dynamics*	Pg. 14
BI 541	Coral Reef Resilience and Restoration *	Pg. 14
BI 546	Marine Megafaunal Ecology*	Pg. 14
BI 550	Marine Genomics *	Pg. 14
BI 551	Biology of Stem Cells	Pg. 8
BI 552	Molecular Biology 1	Pg. 8
BI 560	Systems Biology	Pg. 8
BI 569	Tropical Marine Invertebrates *	Pg. 15
BI 572	Advanced Genetics	Pg. 8
BI 578	Marine Geographic Information Science *	Pg. 15
BI 581	Seminar in Biology: Neurobiology of Brain Disorders	Pg. 13
BI 591	Bio-Optical Oceanography*	Pg. 15
BI 593	Marine Physiology and Climate Change*	Pg. 15
BI 598	Neural Circuits	Pg. 13

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BI 105	Introductory Biology for Health Sciences	Pg. 17
BI 107	Biology 1	Pg. 17
BI 203	Cell Biology	Pg. 17
BI 211	Human Physiology	Pg. 17
BI 407	Animal Behavior	Pg. 17
CH 421	Biochemistry 1	Pg. 18
BI 566	Neurobiology of Consciousness	Pg. 18

* Marine Semester
[^] Tropical Ecology Program