

FALL 2021 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 310 Human Structure & Function
CAS BI 315 Systems Physiology
CAS BI 325/NE 203 Principles of Neuroscience

Upper Level Lab Courses Offered Fall 2021:

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 BI/MET 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 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.
- 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
 - CAS BI 527 (unless both sections of BI 527 & 528 are taken)
 - CAS BI 581 (unless two sections of BI 581 & 582 are taken)
 - CAS BI Readings or Research Courses (2-credit option)

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

Lab

| | | |
|----|-----|------------------|
| C1 | Tue | 1:30pm - 3:15pm |
| C2 | Tue | 3:30pm - 5:15pm |
| D2 | Wed | 12:20pm - 2:05pm |
| D3 | Wed | 2:30pm - 4:15pm |
| E1 | Thu | 1:30pm - 3:15pm |

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

Textbooks & Technology: E. Kristiansen. *Introductory Biology for Health Sciences Majors* 1st Ed. TopHat Publishing, 2020.

Grading: Four lecture exams (45%), lecture assignments and homework (20%), laboratory exercises and exams (35%).

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

CAS BI 126: HUMAN GENETICS

Prereq: None.

Classical and molecular genetics, advances in genetic technologies, and social/ethical issues related to genetic testing. Designed for science and non-science majors, but **cannot fulfill Biology/BMB major/minor or pre-medical requirements.** Students cannot receive credit for both CAS BI 126 and BI 206/216.

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: Oral and/or Signed Communication, Scientific Inquiry I, Research and Information Literacy.

CELL & MOLECULAR

CAS BI 203: CELL BIOLOGY

Prereq: (CAS BI 108 or CAS NE 102) and CAS CH 102 or equivalent.

Coreq: CAS CH 203 or equivalent.

Principles of cellular organization and function: biological molecules, flow of genetic information, membranes and subcellular organelles, and cell regulation. Three hours lecture, one hour discussion.

Lecture

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

* These time slots are reserved for exams.

Discussion

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

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

Textbook & Technology: *The Cell, A Molecular Approach*, 8th edition, by Geoff Cooper. Oxford University Press, 2018.

Grading: Three midterm examinations, homework, in-class questions, discussion, and one final examination.

Hub Units: Scientific Inquiry 1, Quantitative Reasoning 1, 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 |
|----|------|----------|------------------|

Discussion

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

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

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

Grading: Two midterms, final exam, and discussion.

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

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 | 9:30am - 10:45am |
| | | Mon | 6:30pm - 8:00pm |

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

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

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

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

Meets with BI 213.

Discussion

| | | | |
|----|--|--|--|
| B1 | Register for a BI 203 or 213 discussion. | | |
|----|--|--|--|

Lab

| | | | |
|----|---------|------|-------------|
| L1 | Bushell | Wed. | 1:25-5:25pm |
|----|---------|------|-------------|

Prelab

| | | | |
|----|---------|-----|-----------------|
| P1 | Bushell | Mon | 2:30pm - 4:15pm |
|----|---------|-----|-----------------|

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

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

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

CAS BI 281: FUNDAMENTALS OF BIOLOGY 1

Limited to seven-year medical students. Principles of cellular organization and function: biological molecules, flow of genetic information, membranes and subcellular organelles, and cell regulation. Three hours lecture, one hour discussion, three hours lab.

Lecture

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

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

*Time slot reserved for exams.

Lab

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

Discussion

Please register for a BI 203 discussion.

Textbook & Technology: See the BI 203 Textbooks & Technology section.

Grading: See the BI 203 Grading section.

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

CELL & MOLECULAR

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

Lab

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

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

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

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

CAS BI 410: DEVELOPMENTAL BIOLOGY

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

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

Lecture

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

Discussion

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

Notes: Meets with GRS BI 610.

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

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 | Whitty | Tue, Thu | TBA | |
| | | Mon* | 6:30pm - 8:30pm | |

**Time slot reserved for exams*

Lab

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

Discussion

| | | | | | |
|----|-----|------------------|----|-----|------------------|
| C1 | Mon | 12:20pm - 2:05pm | C3 | Wed | 2:30pm - 4:15pm |
| C2 | Tue | 5:00pm - 6:45pm | C4 | Thu | 9:00am - 10:45am |

Notes: This class meets with CAS BI/CH 527, GRS BI/CH 621, and MET CH 421. Students may also register for the CH 421 laboratory and discussion sections; however, preference in registration for these sections will be given to chemistry majors.

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

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

CELL & MOLECULAR

CAS BI 510: INSTITUTIONAL RACISM IN HEALTH AND SCIENCE

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

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

Independent

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

Notes: Meets with ENG BF 510.

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

Grading: Writing assignments/homework, discussion, capstone project

CAS BI 513: GENETICS LAB

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

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

Lab

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

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

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 5:00pm - 6:45pm

A3 Medrano Wed 2:30pm - 4:15pm

A4 Medrano Thu 9:00am - 10:45am

Lab

BA Tue 1:25pm - 5:25pm

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 & Medrano, *Biochemistry Laboratory Manual*, 5th Ed., 2020.

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

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.

CELL & MOLECULAR

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 two exams during the semester (probably 10/14 & 11/18)

Discussion

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

Textbooks & Technology: TBD and TopHat.

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

CAS BI 572: ADVANCED GENETICS

Prereq: CAS BI 206 and CAS BI 203; CAS BI 552 is recommended

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

Lecture and Discussion

| | | | |
|----|--------|----------|-------------------|
| A1 | McCall | Tue, Thu | 11:00am - 12:15pm |
| | | Wed | 12:20pm - 1:10pm |

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

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

CAS BI 594 H1: TOPICS IN BIOLOGY: DNA AND CHROMOSOME DYNAMICS

Prereq: CAS BI 206 or CAS BI 216

Exploration of DNA and chromosome dynamics in mitosis and meiosis. Topics include DNA repair mechanisms, recombination, and chromosome pairing and organization, and what happens when these mechanisms go wrong. Our study will focus on current research in the field through in-depth analysis and discussion of scientific papers.

Independent

| | | | |
|----|----------|----------|-------------------|
| H1 | Hartmann | Mon, Wed | 10:10am - 11:55am |
|----|----------|----------|-------------------|

Textbooks & Technology: Primary literature, notes, and other readings will be provided on the blackboard site.

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

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

Ecology, Behavior & Evolution (pgs. 8-10)
Physiology & Neurobiology (pgs. 11-14)
Marine Semester (pgs. 15-16)
Metropolitan College (MET) (pgs. 17-18)
Research & Readings (pgs. 19-25)

A list of courses accepted toward the CMG specialization can be found in the Bulletin at www.bu.edu/biology/cmgbulletin.

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.

Lecture

| | | | |
|----|----------------------------|---------------|------------------|
| A1 | Mullen, Spilios, Wasserman | Tue, Thu | 12:30pm - 1:45pm |
| A2 | Mullen, Spilios, Wasserman | Mon, Wed, Fri | 2:30pm - 3:20pm |

Lab

| | | | | | |
|----|-----|------------------|----|-----|------------------|
| B1 | Mon | 2:30pm - 5:15pm | D5 | Wed | 2:30pm - 5:15pm |
| B2 | Mon | 2:30pm - 5:15pm | D6 | Wed | 2:30pm - 5:15pm |
| B3 | Mon | 2:30pm - 5:15pm | D7 | Wed | 6:30pm - 9:15pm |
| C1 | Tue | 8:00am - 10:45am | E1 | Thu | 8:00am - 10:45am |
| C2 | Tue | 8:00am - 10:45am | E2 | Thu | 8:00am - 10:45am |
| C3 | Tue | 8:00am - 10:45am | E3 | Thu | 8:00am - 10:45am |
| C4 | Tue | 12:30pm - 3:15pm | E4 | Thu | 12:30pm - 3:15pm |
| C5 | Tue | 12:30pm - 3:15pm | E5 | Thu | 12:30pm - 3:15pm |
| C6 | Tue | 12:30pm - 3:15pm | E6 | Thu | 12:30pm - 3:15pm |
| C7 | Tue | 3:30pm - 6:15pm | E7 | Thu | 6:30pm - 9:15pm |
| C8 | Tue | 3:30pm - 6:15pm | F1 | Fri | 8:00am - 10:45am |
| D1 | Wed | 8:00am - 10:45am | | | |
| D2 | Wed | 8:00am - 10:45am | | | |
| D3 | Wed | 8:00am - 10:45am | | | |
| D4 | Wed | 2:30pm - 5:15pm | | | |

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

Grading: Weekly quizzes, two 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 adaptation, behavior and conservation, nerve cells, circuits, neuromodulators, and behavior, behavioral genetics and genomics, sociogenomics, the development of behavior, hormones and behavior, communication, sexual selection and reproductive behavior, cooperation and altruism, socioecology, social evolution and culture. Emphasis on the interdisciplinary analysis of behavior. Integrated lectures, discussions, and class exercises.

Independent

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

Textbooks & Technology: Primary literature and complementary readings; Traniello, *Behavioral Biology*; Alcock, *Animal Behavior* (edition TBA).

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

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

CAS BI 305: PLANT BIOLOGY

Prereq: (CAS BI107 and CAS BI108)

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

Lecture

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

Lab

| | | | |
|----|---------|-----|-----------------|
| B1 | Primack | Mon | 2:30pm - 5:15pm |
|----|---------|-----|-----------------|

Textbooks & Technology: TBA

Grading: TBA

ECOLOGY, BEHAVIOR & EVOLUTION

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 Staff 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.

CAS BI 309: EVOLUTION

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

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

Lecture

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

Discussion

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

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

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

Hub Units: Ethical Reasoning

CAS BI 407: ANIMAL BEHAVIOR

Prereq: CAS BI 107.

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

Lecture

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

Lab

B1 Mon 2:30pm - 5:15pm F1 Fri 2:30pm - 5:15pm
E1 Thu 12:30pm - 3:15pm

Notes: Meets with BI 607.

Textbooks & Technology: None.

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

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

CAS BI 443: TERRESTRIAL BIOGEOCHEMISTRY

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

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

Lecture

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

Textbooks & Technology: TBA

Grading: TBA

Notes: Meets with BI 643.

ECOLOGY, BEHAVIOR & EVOLUTION

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: Sher and Primack, *Introduction to Conservation Biology*, 2nd ed., 2019.

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

Hub Units: Ethical Reasoning, Oral/Signed Communication

CAS BI 588: PROJECT DESIGN AND STATISTICS IN BIOLOGICAL ANTHROPOLOGY

Prereq: CAS AN 102 or CAS BI 107/108 (for undergraduates) or graduate student standing, and/or consent of instructor.

This seminar teaches students project design and statistics using R and Rstudio. Students will become competent in coding, version control, data reports and commenting code, and implement both basic and advanced statistics to be used in student research projects.

Lecture and Discussion

| | | | |
|----|---------|-----|-----------------|
| A1 | Schmitt | Fri | 2:30pm - 5:15pm |
|----|---------|-----|-----------------|

Notes: Meets with AN 588.

Textbooks & Technology: Kabacoff R. 2015. *R in Action*, 2nd Edition. New York: Manning Publications. Tillman D. 2016. *The Book of R: A First Course in Programming and Statistics*. San Francisco: No Starch Press.

Grading: TBA.

Hub Units: Quantitative Reasoning II, Scientific Inquiry II, Teamwork/Collaboration.

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

Cell & Molecular (pgs. 2-7)
Marine Semester (pgs. 15-16)
Metropolitan College (MET) (pgs. 17-18)
Research & Readings (pgs. 19-25)

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. 11-14)
Marine Semester (pgs. 15-16)
Metropolitan College (MET) (pgs. 17-18)
Research & Readings (pgs. 19-25)

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: (CASBI105 OR CASBI108) & (CASBI106 OR CASBI210); or equivalent. First Year Writing Seminar (e.g., WR 100 or WR 120)

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

Lecture

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

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 for major credit instead).

Textbooks & Technology: Silverthorn, *Human Physiology*, 8th ed., 2019; Top Hat Pro Account and lab manual.

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

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

CAS BI 310: HUMAN STRUCTURE & FUNCTION

Prereq: CAS BI 108 and CAS BI 203

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

Lecture

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

Lab

B1 Tue 3:30pm - 6:15pm

Textbooks & Technology: Saladin, *Human Anatomy*, 6th ed. McGraw-Hill, 2020; Visible Body Virtual Dissection App; Co, Anatomy Course Manual

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

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

CAS BI 315: SYSTEMS PHYSIOLOGY

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

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

Lecture

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

Lab

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

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

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

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

PHYSIOLOGY & NEUROBIOLOGY

CAS BI 325: PRINCIPLES OF NEUROSCIENCE

Prereq: CAS BI 203 or consent of instructor.

This course will introduce fundamentals of the nervous system at descriptive scales ranging from individual cells to the entire brain. Topics will include biophysics of excitable membranes, synaptic transmission, sensory and motor systems, learning and memory, plasticity, neuromodulation, and the biological basis of complex behaviors.

Lecture

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

Discussion

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

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

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

Grading: Texts, quizzes, and participation.

Hub Units: Scientific Inquiry 2, Critical Thinking

CAS BI 445: CELLULAR AND MOLECULAR NEUROPHYSIOLOGY

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

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

Lecture

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

Lab

D1 Mon 2:30pm - 6:15pm

Notes: Meets with NE 445 and BI 645.

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

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

PHYSIOLOGY & NEUROBIOLOGY

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%).

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

CAS BI 535: TRANSLATIONAL RESEARCH IN ALZHEIMER'S DISEASE

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

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

Independent

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

Notes: Meets with NE 535.

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

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

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

PHYSIOLOGY & NEUROBIOLOGY

CAS BI 589: NEURAL IMPACTS ON TUMORIGENESIS

Prereq: BI 108 and BI 203

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

Independent

A1 Tullai Tue, Thu 1:30pm - 3:15pm

Notes: Meets with NE 589.

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

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

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

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. 2-7)
Ecology, Behavior & Evolution (pgs. 8-10)
Metropolitan College (MET) (pgs. 17-18)
Research & Readings (pgs. 19-25)

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 electives toward the Biology, Behavioral Biology, and Ecology & Conservation Biology majors. All CAS BI Marine Semester courses will also count towards the three upper-level labs required for all Biology and all Specialization majors. The Marine Semester program earns the following Hub units: Scientific Inquiry II, Research and Information Literacy, Teamwork/Collaboration, Oral/Signed Communication and Creativity/Innovation.

CAS BI 523: MARINE URBAN ECOLOGY

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 Rotjan Arranged Sep. 7 - Sep. 29

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 Sep. 30 - Oct. 25

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. 19 - Dec. 17

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 Nov. 19 - Dec. 17

CAS BI 546: MARINE MEGAFANAL 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 Kaufman Arranged Sept. 7 - Sept. 29

MARINE SEMESTER

CAS BI 548: MARINE MICROBIAL ECOLOGY: EXPLORING MARINE MICROBES THROUGH MICROSCOPY

Prereq: CAS BI 108; acceptance into the Marine Semester

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

Lecture

MS Marlow Arranged Oct. 26 - Nov. 18

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 Oct. 26 - Nov. 18

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 Wikgren Arranged Oct. 26 - Nov. 18

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.

Lecture

MS Fichot Arranged Sep. 30 - 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 Nov. 22 - Dec. 17

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.

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 in a semester or is a first year or a 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 Kristiansen 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).

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

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 Mon 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.

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

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

A1 Tullai Tue 6:00pm - 8:00pm
Thu 6:00pm - 7:00pm

Discussion

A2 Thu 7:00pm - 8:00pm

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

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.

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

MET BI 407: ANIMAL BEHAVIOR

Prereq: 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

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

METROPOLITAN COLLEGE (MET)

MET CH 421: BIOCHEMISTRY 1

Prereq: CAS CH 204, CH 212, CH 214, or CH 282

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

Lecture

| | | | |
|----|--------|---------------|-------------------|
| A1 | Tolan | Mon | 8:00am - 8:50am |
| | | Mon, Wed, Fri | 9:05am - 9:55am |
| A2 | Whitty | Tue, Thu | 11:00am - 12:15pm |
| | | Mon | 6:30pm - 8:30pm* |

*Time slot reserved for exams.

Lab

| | | |
|----|-----|------------------|
| B1 | Wed | 8:00am - 12:00pm |
| B2 | Wed | 1:25pm - 5:25pm |
| B3 | Wed | 6:30pm - 10:30pm |
| B4 | Thu | 1:25pm - 5:25pm |

Discussion

| | | |
|----|-----|------------------|
| C1 | Mon | 12:20pm - 2:05pm |
| C2 | Tue | 5:00pm - 6:45pm |
| C3 | Wed | 2:30pm - 4:15pm |
| C4 | Thu | 9:00am - 10:45am |

Notes: Meets with CAS BI 421.

Hub Units: Writing-Intensive Course, Quantitative Reasoning II, Critical Thinking, Teamwork/Collaboration.

RESEARCH & READINGS

UNDERGRADUATE RESEARCH IN BIOLOGY

Undergraduate Research in Biology courses (CAS BI 140 - CAS BI 453) require an online application. For more information on research requirements and to apply, visit www.bu.edu/biology/ug-research. Time commitment is a minimum of 6 hours a week for 2-credit research and 12 hours a week for 4-credit research. 4-cr research courses can fulfill up to two Electives, one of which can count toward the three-lab requirement for Biology and specialization majors.

CAS BI 140: FIRST YEAR RESEARCH IN BIOLOGY 1

Prereq: first year standing, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for Biology major or minor credit. First semester first year laboratory research under the supervision of a Biology faculty mentor. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor.

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

CAS BI 141: FIRST YEAR RESEARCH IN BIOLOGY 2

Prereq: first year standing, (BI 140 or UROP semester or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for Biology major or minor credit. Second semester first year laboratory research under the supervision of a Biology faculty mentor. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor.

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

CAS BI 240: SOPHOMORE RESEARCH IN BIOLOGY 1

Prereq: sophomore standing, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for biology major or minor credit. First semester sophomore laboratory research under the supervision of a Biology faculty mentor. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor.

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

CAS BI 241: SOPHOMORE RESEARCH IN BIOLOGY 2

Prereq: sophomore standing, (BI 140 or BI 240 or UROP semester or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for biology major or minor credit. Second semester sophomore laboratory research under the supervision of a Biology faculty mentor. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor.

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

CAS BI 340: JUNIOR RESEARCH IN BIOLOGY 1 (2 CREDITS)

Prereq: junior standing, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for Biology major or minor credit. First semester junior research including the use of research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings required. This course fulfills a single unit in the following BU Hub area: Research and Information Literacy.

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

CAS BI 341: JUNIOR RESEARCH IN BIOLOGY 2 (2 CREDITS)

Prereq: junior standing, consent of instructor (faculty research mentor/sponsor), BI 340 or BI 350 or 2 semesters of first year (BI 140/141) or sophomore research (BI 240/241) or UROP semester or equivalent, and approved application.

[2 cr] Not for Biology major or minor credit. Second semester junior research including the use of research literature and active participation at group meetings. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance with oral presentations at group meetings required. This course fulfills a single unit in the following BU Hub area: Oral/ Signed Communication.

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

RESEARCH & READINGS

CAS BI 350: JUNIOR RESEARCH IN BIOLOGY 1 (4 CREDITS)

Prereq: junior standing, consent of instructor (faculty research mentor/sponsor), and approved application.

First semester junior research including the use of research literature and active participation at group meetings. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance with oral presentations at group meetings required. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Oral/Signed Communication.

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

CAS BI 351: JUNIOR RESEARCH IN BIOLOGY 2 (4 CREDITS)

Prereq: junior standing, [BI 340 or BI 350 or 2 semesters of first year (BI 140/141) or sophomore research (BI 240/241) or UROP semester or equivalent], consent of instructor (faculty research mentor/sponsor), and approved application.

Second semester junior research including the use of research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Students expected to attend group meetings and take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Creativity/Innovation.

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

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

Prereq: junior standing, (BI 341 or BI 351 or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.

Third semester junior research including the use of the research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required. Students expected to take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Writing-Intensive and Creativity/Innovation.

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

CAS BI 450: SENIOR RESEARCH IN BIOLOGY 1

Prereq: senior standing, consent of instructor (faculty research mentor/sponsor), and approved application.

First semester senior research including the use of research literature and active participation at group meetings. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings required. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Oral/Signed Communication.

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

CAS BI 451: SENIOR RESEARCH IN BIOLOGY 2

Prereq: senior standing, [BI 340 or BI 350 or BI 450 or 2 semesters of first year (BI 140/141) or sophomore research (BI 240/241) or UROP semester or equivalent], consent of instructor (faculty research mentor/sponsor), and approved application.

Second semester senior research including the use of the research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Students expected to attend group meetings and take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Creativity/Innovation.

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

CAS BI 452: SENIOR RESEARCH IN BIOLOGY 3

Prereq: senior standing, (BI 341 or BI 351 or BI 451 or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.

Third semester senior research including the use of research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required. Students expected to take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Writing-Intensive and Creativity/Innovation.

Grading: Course grade is determined by laboratory performance.

RESEARCH & READINGS

CAS BI 453: SENIOR RESEARCH IN BIOLOGY 4

Prereq: senior standing, (BI 352 or BI 452 or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.

Coreq: CAS BI 497 or BI 498

Fourth semester senior research including the use of research literature. Application through the Biology Department. Research outside the Biology Department is acceptable if approved and overseen by a Biology faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required.

Grading: Course grade is determined by laboratory performance.

HONORS RESEARCH IN BIOLOGY

Honors Research in Biology offers students the ability to participate in two semesters of mentored 4-credit research (CAS BI 401 and 402) and a 2-credit research seminar (CAS BI 497 or 498). Students also write and defend an honors thesis on their research. For more information on research requirements and to apply, visit www.bu.edu/biology/research-credit. Time commitment is minimum 12 hours/week in lab or fieldwork, meetings, data analysis, and writing.

CAS BI 401: HONORS RESEARCH IN BIOLOGY 1

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

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

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

CAS BI 402: HONORS RESEARCH IN BIOLOGY 2

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

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

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

CAS BI 497: HONORS RESEARCH IN BIOLOGY SEMINAR 1

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

[2 cr] A 2-credit weekly research seminar for students in BI 401, BI 402, or BI 453 in the spring semester. Students learn and present digitally produced descriptions of their research and prepare their theses for defense under the guidance of the Research and Honors Committee. A minimum grade of B+ in this course and BI 402 is required to graduate with honors. Students participate in only one course, either BI 497 or BI 498. This course fulfills a single unit in the following BU Hub areas: Digital/Multimedia Expression.

Grading: Attendance and participation

GRADUATE RESEARCH IN BIOLOGY

Graduate Research in Biology is offered as part of the BA/MS program. This dual degree program is only open to Biology and specialization majors. Students will receive both Bachelor's of Arts and Master's of Science degrees upon graduation. For more information on the BA/MS program, visit <https://www.bu.edu/biology/undergrad/bams/>.

CAS BI 595: MASTER'S RESEARCH IN BIOLOGY

Prereq: Admission into the MS or BA/MS combined program

Biology laboratory research conducted under supervision of a faculty member. Externships are acceptable with prior approval. Minimum of 7.5 or 15 hours per week in the lab, culminating in submission of a written progress report.

Grading: Course grade is determined by laboratory performance.

RESEARCH & READINGS

UNDERGRADUATE RESEARCH IN BMB

Undergraduate Research in Biochemistry and Molecular Biology courses (CAS BB 140 - CAS BB 453) require an application. For more information on research requirements and to apply, visit www.bu.edu/bmb/research. Time commitment is a minimum of 6 hours a week for 2-credit research and 12 hours a week for 4-credit research, not including preparation and evaluation. 4-cr research courses can fulfill an elective for BMB majors. Two semesters of senior-level research can fulfill the Advanced Lab Elective for BMB majors.

CAS BB 140: FIRST YEAR RESEARCH IN BMB 1

Prereq: first year standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for BMB major credit. First semester first year laboratory research under the supervision of a BMB faculty mentor. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor.

Grading: Course grade is determined by laboratory performance.

CAS BB 141: FIRST YEAR RESEARCH IN BMB 2

Prereq: first year standing, (BB 140 or UROP semester or equivalent), GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for BMB major credit. Second semester first year laboratory research under the supervision of a BMB faculty mentor. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor.

Grading: Course grade is determined by laboratory performance.

CAS BB 240: SOPHOMORE RESEARCH IN BMB 1

Prereq: sophomore standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for BMB major credit. First semester sophomore laboratory research under the supervision of a BMB faculty mentor. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor.

Grading: Course grade is determined by laboratory performance.

CAS BB 241: SOPHOMORE RESEARCH IN BMB 2

Prereq: sophomore standing, GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, (BB 140 or BB 141 or BB 240 or UROP semester or equivalent), consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for BMB major credit. Second semester sophomore laboratory research under the supervision of a BMB faculty mentor. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor.

Grading: Course grade is determined by laboratory performance.

CAS BB 340: JUNIOR RESEARCH IN BMB 1 (2 CREDITS)

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

[2 cr] Not for BMB major credit. First semester junior research including the use of research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings required. This course fulfills a single unit in the following BU Hub area: Research and Information Literacy.

Grading: Course grade is determined by laboratory performance.

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

Prereq: junior standing, [BB 340 or BB 350 or 2 semesters of first year (BB 140/141) or sophomore research (BB 240/241) or UROP semester or equivalent], GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

[2 cr] Not for BMB major credit. Second semester junior research including the use of research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings required. This course fulfills a single unit in the following BU Hub area: Research and Information Literacy.

Grading: Course grade is determined by laboratory performance.

CAS BB 350: JUNIOR RESEARCH IN BMB 1 (4 CREDITS)

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

First semester junior research including the use of research literature and active participation at group meetings. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance with oral presentations at group meetings required. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Oral/Signed Communication.

Grading: Course grade is determined by laboratory performance.

RESEARCH & READINGS

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

Prereq: junior standing, [BB 340 or BB 350 or 2 semesters of first year (BB 140/141) or sophomore research (BB 240/241) or UROP semester or equivalent], GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

Second semester junior research including the use of research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Students expected to attend group meetings and take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Creativity/Innovation.

Grading: Course grade is determined by laboratory performance.

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

Prereq: junior standing, (BB 341 or BB 351 or equivalent), GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

Third semester junior research including the use of the research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required. Students expected to take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Writing-Intensive and Creativity/Innovation

Grading: Course grade is determined by laboratory performance.

CAS BB 450: SENIOR RESEARCH IN BMB 1

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

First semester senior research including the use of research literature and active participation at group meetings. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance with oral presentations at group meetings required. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Oral/Signed Communication.

Grading: Course grade is determined by laboratory performance.

CAS BB 451: SENIOR RESEARCH IN BMB 2

Prereq: senior standing, [BB 340 or BB 350 or BB 450 or 2 semesters of first year (BB 140/141) or sophomore research (BB 240/241) or UROP semester or equivalent], GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

Second semester senior research including the use of the research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Students expected to attend group meetings and take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy and Creativity/Innovation.

Grading: Course grade is determined by laboratory performance.

CAS BB 452: SENIOR RESEARCH IN BMB 3

Prereq: senior standing, (BB 341 or BB 351 or BB 451 or equivalent), GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

Third semester senior research including the use of research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required. Students expected to take a lead and make creative contributions to projects. This course fulfills a single unit in the following BU Hub areas: Writing-Intensive and Creativity/Innovation.

Grading: Course grade is determined by laboratory performance.

CAS BB 453: SENIOR RESEARCH IN BMB 4

Prereq: senior standing, (BB 352 or BB 452 or equivalent), GPA in biochemistry and molecular biology (BMB) courses of at least 3.0, consent of instructor (faculty research mentor/sponsor), and approved application.

Coreq: CAS BB 497 or BB 498

Fourth semester senior research including the use of research literature. Application through the BMB Program. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Students conduct research under supervision of a faculty mentor. Attendance at group meetings and final report required.

Grading: Course grade is determined by laboratory performance.

RESEARCH & READINGS

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 BMB

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

Coreq: BB 497.

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

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

CAS BB 497: HONORS RESEARCH IN BMB SEMINAR

Coreq: BB 401.

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

GRADUATE RESEARCH IN BMB

Graduate Research in BMB is offered as part of the BA/MA program. This dual degree program is only open to BMB majors and earns students a Bachelor's degree in BMB and a Master's degree in Biotechnology. For more information on the BA/MA program, visit www.bu.edu/bmb/bama-bulletin.

CAS BB 591: GRADUATE RESEARCH IN BMB

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

BMB laboratory research conducted under supervision of a faculty member. Externships are acceptable if approved and overseen by a BMB faculty member or the BMB Director. Minimum of 15 hours per week in the lab, culminating in submission to the BMB Director of a written progress report and research outline for BB 592.

RESEARCH & READINGS

READINGS IN BIOLOGY

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

CAS BI 171: READINGS IN BIOLOGY 1

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

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

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

CAS BI 271: READINGS IN BIOLOGY 2

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

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

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

CAS BI 371: READINGS IN BIOLOGY 3

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

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

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

CAS BI 471: READINGS IN BIOLOGY 4

Prereq: senior standing and consent of instructor (Biology faculty mentor).

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

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

GRADUATE READINGS IN BIOLOGY

Graduate Readings in Biology is offered as part of the BA/MS program. This dual degree program is only open to Biology and specialization majors. Students will receive both Bachelor's of Arts and Master's of Science degrees upon graduation. For more information on the BA/MS program, visit <https://www.bu.edu/biology/undergrad/bams/>.

GRS BI 701: GRADUATE READINGS IN BIOLOGY

Prereq: consent of instructor, limited to BA/MS students and graduate students in the scholarly paper MS program.

Library research on well-defined subjects determined in consultation with faculty member.

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

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