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

COURSE NOTES:
Courses fulfilling breadth requirements:

Cell & Molecular (CM)
CAS BI 203 Cell Biology
CAS BI 206 Genetics
CAS BI 216 Intensive Genetics

Ecology, Behavior & Evolution (EBE)
CAS BI 225 Behavioral Biology
CAS BI 260 Marine Biology
CAS BI 303 Evolutionary Ecology
CAS BI 306 Biology of Global Change

Neurobiology & Physiology (PN)
CAS BI 315 Systems Physiology

Upper Level Lab Courses Offered Spring 2021:
CAS BI 302 Vertebrate Zoology
CAS/MET BI 303 Evolutionary Ecology
CAS BI 306 Biology of Global Change
CAS/MET BI 315 Systems Physiology
CAS/MET BI/CH 422 Biochemistry 2
CAS BI/NE 449 Neuroscience Design Lab
CAS BB 522 Molecular Biology Lab
CAS BI 527 Biochemistry Lab 1
CAS BI 528 Biochemistry Lab 2
CAS BI 586 Ecological and Evolutionary Genomics
CAS BI Undergrad. Research Courses (first 4-credit semester)

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BMB Courses Pg. 2-4
Cell & Molecular Courses Pg. 5-10
Ecology, Behavior & Evolution Courses Pg. 11-10
Physiology & Neurobiology Courses Pg. 16-18
MET Biology Courses Pg. 19-20
Research & Readings Courses Pg. 21-24
Index Pg. 25-26

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

• Full time status is 12-18 credits per semester. Seniors are automatically awarded a fee waiver so that they may take up to 20 credits per semester without additional fees. Non-seniors with a 3.3 GPA may submit the CAS Course Overload Fee Waiver form.

• PDP, ROTC, and CAS FY/SY courses do not count toward the 128 credits needed to graduate with a BA.

• The following courses do not count toward the Biology or BMB major or minor:
  CAS BI 114 Human Infectious Diseases
  CAS/MET BI 210 Human Anatomy
  CAS BI 528 (unless both sections of BI 527/528 are taken)
  MET BI 566 Neurobio. of Consc. & Evol. of Lang.
  CAS BI 582 (unless two sections of BI 581/582 are taken)
  CAS BI Readings or Research Courses (2 credits)
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, 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.
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.
## HONORS RESEARCH IN BMB

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

### CAS BB 401: HONORS RESEARCH IN BMB

1. **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.

2. **Coreq:** CAS BB 497

   First semester of Honors-level undergraduate research in BMB. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. A minimum grade of B+ in this course and in BB 497/498 and BB 401/402 is required to graduate with Honors in BMB. Students must also present a research talk at the BMB symposium at the end of the spring semester of the academic year. Students will conduct mentored laboratory research with a faculty member of the BMB Program leading to graduation with Honors in BMB. Application through the BMB Program including use of research literature and active participation at group meetings. Oral presentations at group meetings required. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy, Writing-Intensive, and Creativity/Innovation.

   **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 faculty members. Grades for both BB 401 and 402 are determined upon completion of BB 402.

### CAS BB 402: HONORS RESEARCH IN BMB

1. **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.

2. **Coreq:** CAS BB 498

   Second semester of Honors-level undergraduate research leading to graduation with Honors in BMB (continuation of BB 401). Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. A minimum grade of B+ in this course and in BB 497/498 and BB 401/402 is required to graduate with Honors in BMB. Students must also present a research talk at the BMB symposium at the end of the spring semester of the academic year. Students expected to attend and participate at group meetings and take a lead and make creative contributions to projects ending in writing and defending an original thesis with guidance from their mentor. This course fulfills a single unit in the following BU Hub areas: Research and Information Literacy, Writing-Intensive, and Creativity/Innovation.

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

### CAS BB 498: HONORS RESEARCH IN BMB

**SEMINAR 2**

1. **Prereq:** For students currently enrolled in the Honors BMB Program or BB 453 in the spring semester.

2. **Coreq:** CAS BB 402 or BB 453 in the spring semester.

   [1 cr] A one-credit continuation of BB 497 for students enrolled in Honors Research in BMB (BB 402) or BB 453 in the spring. 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 and present at the BMB Symposium at the end of the semester. A minimum grade of B+ in this course and in BB 497 and BB 401/402 is required to graduate with Honors in BMB. This course fulfills a single unit in the following BU Hub areas: Digital/Multimedia Expression.

   **Grading:** Attendance and participation.

### 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](http://www.bu.edu/bmb/bama-bulletin).

### CAS BB 592: GRADUATE RESEARCH IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

1. **Prereq:** Admission to the BA/MA Program.

   Laboratory research conducted under the supervision of a BMB faculty sponsor. Research outside the BMB Program is acceptable if approved and overseen by a BMB faculty sponsor. Minimum of 15 hours per week in the lab, culminating in submission to the BMB Director of a written progress report and research outline for CAS BB 592.

   **Grading:** Course grade is determined by laboratory performance.

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

- Cell & Molecular (pgs. 5-10)
- Physiology & Neurobiology (pgs. 16-18)
- Metropolitan College (MET) (pgs. 19-20)

A list of courses accepted toward the BMB major can be found in the Bulletin at [www.bu.edu/bmb/bulletin](http://www.bu.edu/bmb/bulletin).
CAS BI 108: BIOLOGY 2

Prereq: High school biology and one semester college chemistry strongly recommended.

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

Lecture
A1 Loechler Mon,Wed,Fri 10:10am - 11:00am
A2 Loechler Mon,Wed,Fri 12:20pm - 1:10pm
A3 Spilios Mon,Wed,Fri 1:25pm - 2:15pm

Lab
B1 Mon 2:30pm - 5:15pm D4 Wed 2:30pm - 5:15pm
B2 Mon 2:30pm - 5:15pm D5 Wed 2:30pm - 5:15pm
B3 Mon 2:30pm - 5:15pm D6 Wed 2:30pm - 5:15pm
B4 Mon 6:30pm - 9:15pm D7 Wed 6:30pm - 9:15pm
B5 Mon 6:30pm - 9:15pm D8 Wed 6:30pm - 9:15pm
B6 Mon 6:30pm - 9:15pm E1 Thu 8:00am - 10:45am
C1 Tue 8:00am - 10:45am E2 Thu 8:00am - 10:45am
C2 Tue 8:00am - 10:45am E3 Thu 8:00am - 10:45am
C3 Tue 8:00am - 10:45am E4 Thu 12:30pm - 3:15pm
C4 Tue 12:30pm - 3:15pm E5 Thu 3:30pm - 6:15pm
C5 Tue 3:30pm - 6:15pm E6 Thu 3:30pm - 6:15pm
C6 Tue 3:30pm - 6:15pm E7 Thu 3:30pm - 6:15pm
C7 Tue 3:30pm - 6:15pm E8 Thu 6:30pm - 9:15pm
C8 Tue 6:30pm - 9:15pm E9 Thu 6:30pm - 9:15pm
C9 Tue 6:30pm - 9:15pm F1 Thu 6:30pm - 9:15pm
D2 Wed 8:00am - 10:45am F2 Fri 8:00am - 10:45am
D3 Wed 8:00am - 10:45am


Grading: Lecture exams and quizzes account for approximately 2/3 of the final grade and lab accounts for approximately 1/3 of the final grade.

Course Delivery: LfA

CAS BI 114: HUMAN INFECTIOUS DISEASES

Prereq: None

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

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

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

Notes: Not for Biology major or minor credit.


Grading: 4 lecture exams; laboratory.

Course Delivery: LfA
CAS BI 206: GENETICS

Prereq: CAS BI 108 and CAS CH 203 or equivalent

Principles of classical, molecular, and evolutionary genetics derived from analytical, molecular, and whole genome cytological evidence in animals, plants, and microorganisms. For CMG and BMB majors, BI 216 is highly recommended instead of BI 206. Three hours lecture, one hour discussion. Students may receive credit for CAS BI 206 or 216, but not both courses. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Historical Consciousness, Quantitative Reasoning II, Critical Thinking.

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

Discussion
B1 Wed 12:20pm - 1:10pm
B2 Wed 3:35pm - 4:25pm
B2 Fri 8:00am - 8:50am
B4 Fri 11:15am - 12:05pm

Notes: Students may receive credit for CAS BI 203 or 213, but not both courses.

Textbook & Technology: The Cell 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.

Course Delivery: LfA

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 Staff Tue, Thu 9:30am - 10:45am

Discussion
B1 Wed 12:20pm - 1:10pm
B2 Wed 3:35pm - 4:25pm
B2 Fri 8:00am - 8:50am
B4 Fri 11:15am - 12:05pm

Notes: Students may receive credit for CAS BI 203 or 213, but not both courses.

Textbook & Technology: The Cell 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.

Course Delivery: LfA
### CAS BI 216: INTENSIVE GENETICS
**Prereq:** CAS BI 108/116 and BI 203/213, and CAS CH 203 or consent of instructor

Advanced alternative to CAS BI 206, emphasizing depth of coverage, class discussion, and reading research papers. BI216 (instead of BI206) is highly recommended for BMB majors and Biology majors in the CMG track. Principles of classical, molecular, and evolutionary genetics derived from analytical, molecular, and whole genome cytological evidence in animals, plants, and microorganisms. Three hours lecture, one hour discussion. Students may receive credit for CAS BI 216 or 206, but not both courses. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Historical Consciousness, Quantitative Reasoning II, Research and Information Literacy.

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

*Thursday evening timeslot reserved for exams

**Discussion**

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<td>B1</td>
<td>Mon</td>
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<td>10:10am - 11:00am</td>
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<td>E2</td>
<td>Tue</td>
<td>8:00am - 8:50am</td>
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**Notes:** Meets with BI206/282 for the first half of the semester

**Textbooks & Technology:**
2) Recommended, but not required: Connect subscription that includes Smartbook. Both will be available through the BU Bookstore and other sources.

**Grading:** Average of four exam scores given during the semester (75%); discussion (25%)

### CAS BI 282: FUNDAMENTALS OF BIOLOGY
**Prereq:** (CASCH182) or equivalent, and consent of instructor.

Principles of classical, molecular, and evolutionary genetics derived from analytical, molecular, and whole genome cytological evidence in animals, plants, & microorganisms. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Historical Consciousness, Quantitative Reasoning II, Critical Thinking.

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

**Lab**
- B1 Mon 12:20pm - 1:10pm
- B4 Mon 2:30pm - 3:20pm
- C1 Tue 8:00am - 8:50am
- D3 Wed 1:25pm - 2:15pm

**Notes:** Limited to seven-year medical students. Meets with BI 206.

**Textbooks & Technology:** See BI 206.

**Grading:** See BI 206.

**Course Delivery:** L/F

### CAS BI 385: IMMUNOLOGY
**Prereq:** CAS BI 203, CAS BI 206 and junior standing

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

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

**Discussion**

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<td>I1</td>
<td>Fri</td>
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**Grading:** 3 exams (2 midterms and 1 final) 80%; discussion/participation 20%.

**Course Delivery:** L

### CAS BI 411: MICROBIOME: OUR INTIMATE RELATIONSHIP WITH MICROORGANISMS
**Prereq:** CAS BI 203 (or equivalent) and CAS BI 206 (or equivalent) or consent of instructor

There are more bacterial cells inhabiting our bodies than actual human cells. This abundant and diverse population of microbes – referred to as the “microbiome” – colonizes several tissues in our body and plays important roles in maintaining our health. Topics will include the evolutionary, ecological, cellular, molecular and medical aspects of the interactions between animals and the bacterial communities that have evolved with them. Three hours lecture; one hour discussion.

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

**Notes:** Meets with GRS BI 611.

**Textbooks & Technology:** Scientific papers will be made available to the students throughout the course via Blackboard.

**Grading:** Midterm 30%; Oral Presentation and Discussion 20%; Final Exam 40%; Participation 10%.

**Course Delivery:** L/F
**CELL & MOLECULAR**

**CAS BI 422: BIOCHEMISTRY 2**  
*Prereq: CAS BI 421 or CAS CH 421 or equivalent*  
Cell metabolism, with special emphasis on the uptake of food materials, the integration and regulation of catabolic, anabolic, and anaplerotic routes, and the generation and utilization of energy. Lectures include consideration of events in prokaryotic and eukaryotic organisms.

**Lecture**  
A1  
Tolan  
Mon, Wed, Fri  
9:05am - 9:55am  
Wed  
7:00pm - 9:00pm  

*Wednesday evening timeslot reserved for exams*

**Lab & Discussion**  
B1  
Mon  
12:20pm - 4:20pm  
Lab  
B2  
Mon  
5:30pm - 9:30pm  
Lab  
B3  
Wed  
2:30pm - 6:30pm  
Lab  
B4  
Thu  
5:30pm - 9:30pm  
Lab  
B5  
Fri  
12:20pm - 4:20pm  
Lab  
B6  
Fri  
5:30pm - 9:30pm  
Lab  
B7  
Tue, Thu  
8:00am - 12:00pm  
Lab  

*Co-req. is BI/CH 527*

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


**Grading:** Hour exams, lab, final.

**Course Delivery:** Fully in-person course

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**CAS BI 459: LECTURES IN BIOCHEMISTRY 2**  
*Prereq: CAS BI 421 or CAS CH 421 or equivalent*  
Cell metabolism, with special emphasis on the uptake of food materials, the integration and regulation of catabolic, anabolic, and anaplerotic routes, and the generation and utilization of energy. Lectures include consideration of events in prokaryotic and eukaryotic organisms.

**Independent**  
A1  
Tolan  
Mon, Wed, Fri  
9:05am - 9:55am  


**Grading:** Hour exams, final.

**Course Delivery:** Fully remote course

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**CAS BI 481: MOLECULAR BIOLOGY OF THE NEURON**  
*Prereq: BI 325 (preferred) or BI 203.*  
Topics include electrical properties of neurons, a survey of neurotransmitters, molecular structure and function of receptors, synaptic transmission, intracellular signaling, and the molecular biology of sensory transduction.

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

**Notes:** Meets with CAS NE 481 and GRS BI 681.

**Textbooks & Technology:** none

**Grading:** 2 midterms, 1 final exam, and discussion.

**Course Delivery:** LF/A
CAS BB 522: MOLECULAR BIOLOGY LAB

Prereq: CAS BI 552

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

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

Notes: Permission required.

Textbooks & Technology: Xeroxed lab note packet.

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

Course Delivery: Fully in-person course

CAS BI 527: BIOCHEMISTRY LAB 1

Prereq: BI/CH 437.

[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 Arranged January 19 - March 5

Lab
B1 Tue, Thu 8:00am - 12:00pm

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


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

Course Delivery: Fully in-person course

CAS BI 528: BIOCHEMISTRY LABORATORY 2

Prereq: CH 437

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

Lecture
A1 Medrano Fri 10:10am - 11:55am
A2 Medrano Thu 3:30pm - 5:15pm
A3 Medrano Wed 12:20pm - 2:05pm

Lab
B1 Medrano Mon 12:20pm - 4:20pm
B2 Medrano Mon 5:30pm - 9:30pm
B3 Medrano Wed 2:30pm - 6:30pm
B4 Medrano Thu 5:30pm - 9:30pm
B5 Medrano Fri 12:20pm - 4:20pm
B6 Medrano Fri 5:30pm - 9:30pm

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


Grading: Lab preparation, lab reports, final exam.

Course Delivery: Fully in-person course

CAS BI 553: MOLECULAR BIOLOGY 2

Prereq: CAS BI 552, recommended: BI/CH 421/422

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

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

Textbooks & Technology: none.

Grading: Three exams, discussion, participation.

Course Delivery: LfA
CELL & MOLECULAR

CAS BI 565: FUNCTIONAL GENOMICS
Prereq: CAS BI 552 or consent from instructor.

Recent years have seen an explosion in the number of organisms for which sequenced genomes are available. However, we are only beginning to understand how the information encoded in the million/billion DNA bases of eukaryotic genomes is organized and how that information is translated into function. Throughout this course, we will start to answer central questions in the molecular biology and functional genomics fields, including: Given that only ~2% of the genome encodes for proteins, what is the function of the rest of the genome? How is it possible that yeast, worms and humans have a similar number of genes? What is the flow of information in the cell that controls gene function and activity? Which experimental approaches allow us to tackle these questions?

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

Textbooks & Technology: Review articles and research papers on Blackboard.

Grading: Exam I: 25 %, Exam II: 30 %, Project: 15 %, Assignments: 9%, Participation: 8%, Paper presentation: 8%, Quizzes: 5%.

Course Delivery: Fully remote course

CAS BI 576: CARCINOGENESIS
Prereq: BI 203, BI 206, BI 552

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

Lecture
A1  Gilmore, Tullai  Mon  2:30pm - 4:15pm

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

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


Grading: Three exams, presentation, participation.

Course Delivery: LFA

CAS BI 594: TOPICS IN BIOLOGY: QUANTITATIVE MICROBIOLOGY
Prereq: CAS BI 108 or equivalent, CAS MA 121 or equivalent, and CAS PY 105 or equivalent, or consent of instructor

Important bacterial behaviors and phenomena are described with mathematical models including growth, multispecies interactions, motility, and cell differentiation. Every subject is motivated directly by experimental data, with specific discussion of the techniques used to collect the data, their biases, and their limitations. The goal is to show how quantitative models can give a unified, conceptual understanding of complicated, living systems and generate new hypotheses for experiments. Homework assignments will be in python and the course will include an introduction to python. No prior programming experience needed. Even though the course deals specifically with prokaryotes, the techniques and approaches learned are applicable to any area of the life sciences.

Independent
L1  Larkin  Mon, Wed, Fri  4:30pm - 6:15pm

Textbooks & Technology: None. Required reading will be provided by the instructor.

Grading: Homework (75%), Final presentation or project (25%)

Course Delivery: LFA

Additional electives for the CMG specialization can be found in these sections:
Ecology, Behavior & Evolution (pgs. 11-15)
Physiology & Neurobiology (pgs. 16-18)
Metropolitan College (MET) (pgs. 19-20)
Research & Readings (pgs. 21-24)
A list of courses accepted toward the CMG specialization can be found in the Bulletin at www.bu.edu/biology/cmg-bulletin.
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, from classic studies to current trends. Topics include behavioral adaptation, hormones and behavior, nerve cells, circuits, neuromodulators and behavior, behavioral genetics and genomics, the development of behavior, communication, reproductive behavior, social evolution and culture, cooperation and altruism, sociality and brain evolution. Emphasis on the integrative analysis of behavior.

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 and class presentation, article analysis and discussion, engagement, and participation.

Course Delivery: LfA

CAS BI 260: MARINE BIOLOGY
Prereq: CAS BI 107 or consent of instructor.

Life in the seas: its ecology, evolution, and human impacts. Includes behavioral, physiological, structural, ecological, and evolutionary perspectives. A prerequisite for the Marine Semester. Effective Spring 2019, this course fulfills a single unit in each of the following BU Hub areas: Scientific Inquiry I, Critical Thinking, Research and Information Literacy.

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

Discussion
B1  Mon  2:30pm - 3:20pm  C3  Tue  3:35pm - 4:25pm
C2  Tue  11:15am - 12:05pm  F1  Fri  9:05am - 9:55am

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

Grading: Three exams, discussion, and participation.

Course Delivery: LfA

CAS BI 302: VERTEBRATE ZOOLOGY
Prereq: CAS BI 107

Methods and principles of comparative vertebrate zoology. Phylogeny, natural history, adaptation, and taxonomy. Laboratory emphasis on correlation among structural, physiological, and evolutionary features of selected vertebrates by both dissection and experimentation. Field trips. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Historical Consciousness, Scientific Inquiry II, Critical Thinking.

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

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


Grading: Multiple lecture quizzes. lab quizzes, and class participation.

Course Delivery: Fully in-person course (lecture is remote, but lab must be in person)

CAS BI 303: ECOLOGY
Prereq: CAS BI 107 recommended: CAS BI 206, MA 121/123

Investigation of ecological processes and patterns at the individual, population, and community level. An evolutionary approach is emphasized. One day-long field trip required. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Scientific Inquiry II, Quantitative Reasoning II, Digital/Multimedia Expression.

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

Lab
B1  Mon  2:30pm - 5:15pm
C1  Tue  3:30pm - 6:15pm
E1  Thu  12:30pm - 3:15pm

Textbooks & Technology: Molles. Ecology. 6th Edition

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

Course Delivery: LfA
## CAS BI 306: BIOLOGY OF GLOBAL CHANGE

**Prereq:** CAS BI 107, *Recommended:* CAS CH 101 or CH 171

The ecological impacts of human activity on the Earth’s climate and terrestrial and aquatic ecosystems. Climate change, productivity and land-atmosphere feedbacks. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Scientific Inquiry II, Ethical Reasoning, Research and Information Literacy.

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

**Lab**
- **B1** Mon  
  2:30pm - 5:15pm  
  **D1** Wed  
  2:30pm - 5:15pm
- **C1** Tue  
  12:30pm - 3:15pm  
  **E1** Thu  
  3:30pm - 6:15pm

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

**Grading:** Two exams (20%), final exam (30%), lab and participation (30%).

**Course Delivery:** LfA

## CAS BI 404: ORNITHOLOGY

**Prereq:** BI 107

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

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

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

**Textbooks & Technology:** none

**Grading:** Multiple quizzes and class participation.

**Course Delivery:** Fully remote course

## CAS BI 423: MARINE BIOGEOCHEMISTRY

**Prereq:** CAS ES 144 and (CH 102 or Marine Semester).

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

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

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

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

**Grading:** Exams, class presentations, and participation in weekly literature journals and discussions.

**Course Delivery:** LfA

## CAS BI 500: SHARK BIOLOGY & CONSERVATION

**Prereq:** Some background in ecology and/or evolution recommended.

This course explores the natural history and behavior of sharks and their relationship to other animals in the ecosystem. Conservation of sharks and other elasmobranchs is crucial to ecosystem function and requires accurate scientific knowledge of species in order to implement the best conservation practices. The course will delve in detail into the life, natural history, behavior and psychology of one of the best-known wide-ranging species, the Pacific grey reef shark (*Carcharhinus amblyrhynchos*). We will examine shark ecotourism case studies from Palau, Tahiti, Fiji and Belize. In class, you will be able to handle a variety of shark specimens, tracking technology, anti-shark shield and other devices used to study big wild animals in the open sea. We will include discussion on how to communicate fish natural history using videos and photos, which will be used extensively in lectures.

**Independent**
- **L1** Lobel  
  Tue, Thu  
  9:00am - 10:45am

**Textbooks & Technology:** Scientific papers will be made available to the students throughout the course

**Grading:** Midterm 40%; Project and Discussion 40%; Dissection lab 10%; Participation 10%.

**Course Delivery:** LfA
CAS BI 504: ADVANCED EVOLUTIONARY ANALYSIS

Prereq: CAS BI 309 or consent of instructor

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

Lecture and Discussion

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

Textbooks & Technology: Readings will be available through Blackboard.

Grading: Midterm Exams (50%); Discussion (25%); Paper (25%)

Course Delivery: LfA

CAS BI 506: PHENOTYPIC PLASTICITY

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

Explores the flexible phenotype as a product of development and a target of natural selection, and addresses the role of phenotypic plasticity in ecological interactions and evolutionary diversity. Topics: evolution and mechanisms of plasticity; role of plasticity in ecology, diversification of life, and conservation in a changing environment.

Lecture

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

Discussion

B1   Wed  10:10am - 11:00am

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

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

Course Delivery: Fully remote course

CAS BI 530: FOREST ECOLOGY

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

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

Lecture and Discussion

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

Notes: Meets with GE 530.


Grading: Two exams (40%), Class assignments (55%), Class participation (5%)

Course Delivery: LfA

CAS BI 542: NEUROETHOLOGY

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

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

Independent

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

Notes: Meets with CAS NE 542.


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

Course Delivery: Fully remote course
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. Effective Fall 2019, this course fulfills a single unit in the following BU Hub area: Teamwork/Collaboration.

Independent
A1  Finnerty  Tue, Thu  12:30pm - 3:15pm

Course Delivery: LfA

CAS BI 582: SEMINAR IN BIOLOGY: INTRODUCTION TO STATISTICAL MODELLING

Prereq: CAS MA 115 or equivalent, or permission of the instructor

[2 cr] Not for Biology major or minor credit unless two sections of BI 581/582 are taken. Statistical modelling is a vital part of all quantitative research. While biological, environmental and social data are famously complicated, modern statistical methods are able to accommodate many of these complications. Other problems can be avoided through careful study design and data collection. This course aims to guide students through modern statistical principles and methods. The main software platform for the course is ‘R’, a powerful, flexible and free resource. The lectures start with introductions to statistics basics, for those with little previous knowledge of statistics, and those wanting a refresher, and will lead all the way to generalized and mixed model analysis and other useful tools commonly used in modern ecological/evolutionary/behavioral and marine biology research. The lectures will be accompanied by practicals, which allow practicing material covered in the lectures using R.

Independent
R1  Rueger  Mon, Wed  11:15am - 12:05pm

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

Textbooks & Technology: Readings and other course materials will be made available on Blackboard.

Grading: Grades will be based on participation in lectures, practicals and practical assignments.

Course Delivery: LfA
CAS BI 586: ECOLOGICAL AND EVOLUTIONARY GENOMICS

Prereq: (BI 206 or BI 216) and (MA 115 or MA 213); also recommended are BI 303 and BI 309; or consent of instructor

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

Lecture and Lab
A1 Davies Tue, Thu 9:00am - 10:45am

Textbooks & Technology: TBA

Grading: Bioinformatic Labs: 45%; Literature discussion: 25%; Final research project: 30%

Course Delivery: Fully remote course

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

Cell & Molecular (pgs. 5-10)
Metropolitan College (MET) (pgs. 19-20)
Research & Readings (pgs. 21-24)

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. 16-18)
Research & Readings (pgs. 21-24)

A list of courses accepted toward the SBB specialization can be found in the Bulletin at www.bu.edu/biology/sbb-bulletin.
CAS BI 210: HUMAN ANATOMY

Prereq: CAS BI 105 or equivalent

Not for Biology major or minor credit. Intensive pre-professional course for students whose programs require anatomy. Gross structure of the human body; skeletal, muscular, nervous, respiratory, circulatory, digestive, urinary, and reproductive systems. Lab requires dissection. Carries natural science divisional credit (with lab) in CAS. Effective Spring 2020, this course fulfills a single unit in each of the following BU Hub areas: Scientific Inquiry I, Digital/Multimedia Expression, Creativity/Innovation.

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

Lab
B1  Mon  9:00am - 10:45am  D2  Wed  12:20pm - 2:05pm
B2  Mon  12:20pm - 2:05pm  D3  Wed  2:30pm - 4:15pm
C1  Tue  1:30pm - 3:15pm  E1  Thu  1:30pm - 3:15pm
C2  Tue  3:30pm - 5:15pm  E2  Thu  3:30pm - 5:15pm
D1  Wed  9:00am - 10:45am  F1  Fri  9:00am - 10:45am

Notes: Not for Biology major or minor credit.


Grading: 3 midterm lecture exams; 1 cumulative lecture final; 2 laboratory practical exams.

Course Delivery: LfA

CAS BI 230: BEHAVIORAL ENDOCRINOLOGY

Prereq: (BI 108 or NE 102) and sophomore standing.

Hormonal control of reproductive and parental behaviors, social affiliation, aggression, fluid homeostasis, biological rhythms including seasonal reproduction, stress, learning and memory, affective disorders and steroid abuse. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Scientific Inquiry I, Oral and/or Signed Communication, Teamwork/Collaboration.

Lecture and Discussion
A1  DiBenedictis  Mon, Wed, Fri  2:30pm - 3:20pm
                              Fri  3:35pm - 4:25pm

Notes: Meets with NE 230.


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

Course Delivery: Fully remote course

CAS BI 315: SYSTEMS PHYSIOLOGY

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

An introduction to physiological principles applied across all levels of organization (cell, tissue, organ system). Preparation for more advanced courses in physiology. Topics include homeostasis and neural, muscle, respiratory, cardiovascular, renal, endocrine, gastrointestinal, and metabolic physiology. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Scientific Inquiry II, Writing-Intensive Course, Critical Thinking, Teamwork/Collaboration.

Lecture
A1  Muscedere  Tue,Thu  11:00am - 12:15pm

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
B3  Mon  9:00am - 10:45am  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  E4  Thu  6:30pm - 9:15pm
C4  Tue  6:30pm - 9:15pm  F1  Fri  8:00am - 10:45am
D1  Wed  8:00am - 10:45am


Grading: Three team papers and one individual paper.

Course Delivery: LfA
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, neumodulation, and the biological basis of complex behaviors. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Scientific Inquiry II, Critical Thinking.

Lecture

A1 Cruz-Martín Tue,Thu 2:00pm - 3:15pm

Discussion

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


Grading: Three midterms.

Course Delivery: LfA

CAS BI 349: NEUROTOXINS IN BIOLOGY, MEDICINE, AGRICULTURE AND WAR

Prereq: BI 108 or NE 102 or equivalent.

We will start by examining how neurotoxins in different animals are used for distinct behavioral needs, such as defense versus predation. Examining evolutionary lineage of different types Neurotoxins will also be discussed and give us insights on how neurotoxins evolved and their roles in evolutionary ”arm race”. We will also cover mechanisms of neurotoxin actions at cellular and molecular levels. At system level, envenomation by poisonous animal is of clinical importance in many parts of the world, consequences of venoms on mammalian physiological systems will be discussed. In additional to naturally occurring neurotoxins, many synthetic chemicals used as pesticides and chemical weapons are also neurotoxins. We will discuss the history, mechanisms and physiological effects of these manmade agents. Effective Fall 2019, this course fulfills a single unit in each of the following BU Hub areas: Quantitative Reasoning I, Critical Thinking.

Independent

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

Notes: Meets with CAS NE 349.


Grading: Midterm 1 (25%); Midterm 2 (25%); Final (25%)
Discussion/presentation (25%)

Course Delivery: LfA

CAS BI 449: NEUROSCIENCE DESIGN LAB

Prereq: (BI 315 OR BI 325 OR NE 203) or consent of instructor.

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

Lab

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

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

Textbooks & Technology: Purchase of an Arduino kit.

Grading: Lab notebook, project and participation.

Course Delivery: LfA

CAS BI 481: MOLECULAR BIOLOGY OF THE NEURON

Prereq: BI 325 (preferred) or BI 203.

Topics include electrical properties of neurons, a survey of neurotransmitters, molecular structure and function of receptors, synaptic transmission, intracellular signaling, and the molecular biology of sensory transduction.

Independent

A1 Ho Mon, Wed 2:30pm - 4:15pm

Notes: Meets with CAS NE 481 and GRS BI 681.

Textbooks & Technology: none

Grading: 2 midterms, 1 final exam, and discussion.

Course Delivery: LfA
CAS BI 525: BIOLOGY OF NEURODEGENERATIVE DISEASES
Prereq: (CAS NE 102 or CAS BI 203) and (CAS NE 203 or CAS BI 325).

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

Independent
A1 Pastorino Mon, Wed, Fri 9:05am - 9:55am
       Wed 10:10am - 11:00am

Notes: Meets with CAS NE 525.

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

Grading: Exams (66%), assignments (12%), paper presentation (12%), and participation in class (10%).

Course Delivery: LfA

CAS BI 594 B1: TOPICS IN BIOLOGY: DRUG DISCOVERY IN THE NEUROSCIENCES
Prereq: BI 108 and CH 102 (and PS/NE 333 strongly recommended) or permission of instructor.

Drug discovery and development is long, complex, and expensive process which involves many stages where potential problems must be addressed. This process is uniquely compounded when a drug is intended to treat a neurological disease due to the complexity of the nervous system. This course will introduce the Drug Discovery Process, Pharmacology of known central nervous system drugs, and--through scientific literature--focus on several areas of recent drug discovery for neurological and neuropsychiatric diseases.

Independent
B1 Bushell Tue, Thu 9:00am - 10:45am

Notes: Meets with NE 594 B1.

Textbooks & Technology: TBA.

Grading: TBA.

Course Delivery: LfA

CAS BI 599: PHYSIOLOGY OF THE SYNAPSE
Prereq: Junior standing and CAS BI 325 or BI 481 or BI 445 recommended.

Neuron development and maturation, synapse formation, structure and molecular components of synapses, synaptic transmission, synaptic plasticity, neurotransmitter receptors, cellular basis for learning and memory, synaptic pathology in neurological diseases. Two hours lecture, two hours paper presentation and discussion.

Lecture and Discussion
A1 Man Wed, Fri 10:10am - 11:55am

Notes: Wednesday meetings are for paper presentations and Friday meetings are for lecture.

Textbooks & Technology: Synapses (2003) by W. Maxwell Cowan and Thomas C. Südhof

Grading: Midterm and final exams (85%); paper presentation and attendance (15%)

Course Delivery: LfA

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

Cell & Molecular (pgs. 5-10)
Ecology, Behavior & Evolution (pgs. 11-15)
Metropolitan College (MET) (pgs. 19-20)
Research & Readings (pgs. 21-24)

A list of courses accepted toward the Neurobiology specialization can be found in the Bulletin at www.bu.edu/biology/nb-bulletin.
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. 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 108: BIOLOGY 2**
*Prereq: One year of high school biology and chemistry strongly recommended. Coreq: CH 101 and CH 102 recommended as prereqs or coreqs.*
For pre-med students and students who plan to major in the natural sciences. Required for Biology majors. Course examines cells, genetics, development, physiology, and neurobiology.

Lecture
- A1 Hulbert Mon 6:00pm - 8:45pm

Lab
- A2 Kieswetter Wed 6:00pm - 8:45pm

**MET BI 206: GENETICS**
*Prereq: BI 108 or equivalent; CH 203 recommended.*
Principles of heredity as derived from genetic, biochemical, and cytological evidence in animals, plants, and microorganisms. For BMB majors and Biology majors in the CMG track, BI 216 is highly recommended instead of BI 206.

Lecture and Discussion
- A1 Celenza Tue, Thu 6:00pm - 7:30pm
  - Tue 7:30pm - 8:30pm

**MET BI 210: HUMAN ANATOMY**
*Prereq: BI 105*
Not for Biology or BMB major/minor credit. Gross structure of the human body: skeletal, muscular, nervous, respiratory, circulatory, digestive, urinary, and reproductive systems. Laboratory course.

Lecture
- A1 Kieswetter Wed 6:00pm - 8:45pm

Lab
- A2 Taylor Thu 6:00pm - 7:45pm

Notes: Not for Biology or BMB major credit.

**MET BI 303: ECOLOGY**
*Prereq: BI 107*
Basic principles of ecology, population dynamics and behavior, interrelationships of plants and animals and their physical and chemical environment. Structure and function of ecosystems and community dynamics. Laboratory course.

Lecture
- A1 Wasserman Mon 6:00pm - 8:45pm

Lab
- A2 Wasserman Wed 6:00pm - 8:45pm

**MET BI 315: SYSTEMS PHYSIOLOGY**
*Prereq: BI 108 & BI 203*
An introduction to the basic physiological principles applied across all levels of organization (cell, tissue, organ system) and intended to prepare the student for more advanced courses in physiology. Topics include homeostasis, neural, muscle, cardiopulmonary, renal, endocrine, and reproductive physiology.

Lecture
- A1 Vyshedskiy Thu 6:00pm - 8:45pm

Lab
- A2 Seliga Wed 6:00pm - 8:45pm
MET CH 422: BIOCHEMISTRY 2

Prereq: BI/CH 421 or equivalent.

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

Lecture
A1 Tolan Mon, Wed, Fri 9:05am - 9:55am
   Wed 7:00pm - 9:00pm

*Wednesday evening timeslot reserved for exams

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

Discussion
C1 Fri 10:10am - 11:55am
C2 Thu 3:30pm - 5:15pm
C3 Wed 12:20pm - 2:05pm

Notes: Meets with CAS BI 422.

MET BI 566: NEUROBIOLOGY OF CONSCIOUSNESS AND EVOLUTION OF LANGUAGE

Prereq: BI 108 or equivalent.

Not accepted for Biology major or minor credit. 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 nonhuman 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

Notes: Not for Biology or BMB major/minor credit.
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 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 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 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 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 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 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.
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.
CAS BI 453: SENIOR RESEARCH IN BIOLOGY 4
Prereq: senior standing, cumulative GPA of at least 3.5, and approval of the Biology Research and Honors Committee.
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 areas: 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 spring 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

CAS BI 498: HONORS RESEARCH IN BIOLOGY SEMINAR 2
Prereq: For students currently enrolled in BI 401, BI 402, or BI 453 in the spring 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
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.

CAS BI 372: READINGS IN BIOLOGY 3
Prereq: junior standing, consent of instructor (Biology faculty mentor), and approved application.
[2 cr] Not for biology major or minor credit. Library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member.
Grading: Individual discussions and/or a paper presentation may be required.

CAS BI 472: READINGS IN BIOLOGY 4
Prereq: junior or senior standing, cumulative GPA in biology of at least 3.0, and consent of instructor (Biology faculty mentor).
[2 cr] Not for biology major or minor credit. Intensive library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member. May be taken as preparation for BI 401/402 or BI 491/492.
Grading: Individual discussions and/or a paper presentation may be required.

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.

CAS BI 172: READINGS IN BIOLOGY 1
Prereq: freshman standing, consent of instructor (Biology faculty mentor), and approved application.
[2 cr] Not for biology major or minor credit. Library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member.
Grading: Individual discussions and/or a paper presentation may be required.

CAS BI 272: READINGS IN BIOLOGY 2
Prereq: sophomore standing, consent of instructor (Biology faculty mentor), and approved application.
[2 cr] Not for biology major or minor credit. Library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member.
Grading: Individual discussions and/or a paper presentation may be required.

CAS BI 172: READINGS IN BIOLOGY 1
Prereq: freshman standing, consent of instructor (Biology faculty mentor), and approved application.

CAS BI 272: READINGS IN BIOLOGY 2
Prereq: sophomore standing, consent of instructor (Biology faculty mentor), and approved application.

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.

CAS BI 372: READINGS IN BIOLOGY 3
Prereq: junior standing, consent of instructor (Biology faculty mentor), and approved application.
[2 cr] Not for biology major or minor credit. Library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member.
Grading: Individual discussions and/or a paper presentation may be required.

CAS BI 472: READINGS IN BIOLOGY 4
Prereq: junior or senior standing, cumulative GPA in biology of at least 3.0, and consent of instructor (Biology faculty mentor).
[2 cr] Not for biology major or minor credit. Intensive library research on a well-defined topic in the biological sciences, chosen in conjunction with a Biology faculty member. May be taken as preparation for BI 401/402 or BI 491/492.
Grading: Individual discussions and/or a paper presentation may be required.

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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<td>BI 701</td>
<td>Graduate Readings in Biology</td>
<td>pg. 24</td>
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